The Dock and Harbour Authority

No. 304. Vol. XXVI. Edited by BRYSSON CUNNINGHAM, D.Sc. B.E., F.R.S.E., M.Inst.C.E. FEBRUARY, 1946.

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Editorial Comments

A Great Northern Ireland Port

Our last descriptive notice of the great shipping centre of Belfast in Northern Ireland, was in April, 1938, when just before the rapidly accentuating crisis in Europe, an account was given of the enterprising action of the Harbour Commissioners in the creation of a Harbour Airport which was officially opened by Mrs. Neville Chamberlain on March 16th of that year. Prior to that, we have to go back to October, 1929, for any detailed description of the Harbour. Accordingly, we feel that the time is opportune for some further account of the port, including its war-time activities, as set out clearly in his inaugural address by Mr. John McCaughey on his election to the Chairmanship of the Harbour Board; an address which, incorporated in this issue, will be found by our readers both welcome and informative. We are indebted to Mr. James Alexander, the new General Manager and Secretary of the undertaking for the additional particulars which round off Mr. McCaughey's interesting statement.

The record of the port's war-time achievements, admirable as it is, is, however, merely the prelude to a period of further activity, for Belfast, full of courage and energy, is not disposed to rest on its laurels, but is anxious to achieve even greater things. It has now under consideration plans of civic development, which, so far as the port is concerned, are being dealt with by a Joint Committee of representatives of the City Council and of the Harbour Board, with an official of the Ministry of Commerce in Northern Ireland as chairman. The most important of the matters engaging the attention of this committee are the proposed bridge over the River Lagan, the expansion of the Air Port and the development of the quay area in the vicinity of Queen's Bridge. As an alternative to the bridge, there is a proposal for the construction of a tunnel under the river. Whichever scheme is adopted, it will be a means of relieving the traffic congestion experienced at present and of improving the landward accessibility of the port.

Good wishes on all sides will attend these efforts of a distinguished port authority to extend the scope of its operations.

Port of London Administration Changes.

With the advent of the New Year, important changes have taken place in the administrative organisation of the Port of London Authority. The Rt. Hon. Thomas Wiles, who has so worthily held the chairmanship during the exacting and perilous period of the war, has now relinquished the post and has been succeeded by a statesman of high renown, the Chancellor of the Exchequer under the late Coalition Government, who has recently also figured prominently in the negotiations with the United States Government over the so-called Atomic Bomb. Sir John Anderson is an outstanding national personality, with a great reputation in finance, as well as in scientific matters, and his acceptance of office augurs well for the future of the great Empire Port of London.

Mr. L. H. Bolton, after several years of much appreciated and effective service, having retired from the deputy chairmanship, Sir Douglas Ritchie, hitherto general manager, has been selected to fill the vacancy and both he and the Authority are to be congratulated on an admirable choice. Sir Douglas has been succeeded as general manager by Major Theo. Williams, formerly Dock and Traffic Manager, whose close knowledge of port affairs and intimate acquaintance with dock labour problems, eminently qualifies him for the post.

Altogether, the changes are such as to produce a feeling of satisfaction and to inspire confidence that the noble traditions of the port will be worthily upheld during the anxious years of trade recovery which lie ahead.

The Clyde Estuary Problem.

In our last issue we dealt with the proposals of the Clyde Estuary Committee for the formation of a new Port Authority for the Clyde area and gave extracts from their Report relating thereto. In the present issue, we include extracts from the remainder of the Report, dealing with the subject of additional facilities required for shipping and quayside operation.

The Committee, in the course of their investigations, received a number of suggestions for the development and improvement of the existing accommodation, and these they examined with care and attention. They have, as a result, recommended that the new Port Authority, when formed, should proceed to the formulation of a " Master Plan " which should include the following: " Dry Dock facilities for the largest ships; Better facilities for handling ore cargoes; Increased mechanisation; First class roads serving and radiating from the dock areas; Improvement and expansion of barge traffic and the Construction of a Naval Base."

With the last-named item, this Journal has no concern: it is purely a matter for the British Admiralty.

Editorial Comments – continued

As regards the provision of dry dock accommodation for the largest ships, there is little question that sympathetic interest will be forthcoming for this project, since it would be an appropriate accompaniment to the world-renowned shipbuilding facilities possessed by the port. It cannot but be disappointing to the citizens of Glasgow to know that, having built locally vessels of incomparable size and distinction, they cannot claim their privilege of receiving them for overhaul and repair. At the same time, it has to be pointed out that the *Queen Elizabeth* and *Queen Mary* do not under normal peace-time conditions include Glasgow in their itineraries, and that their usual port of destination in this country—Southampton—possesses such ample facilities for ship overhaul and refit that a special voyage to Glasgow for the purpose could hardly be regarded as imperative.

However, there is no telling what the future may have in store and it may reasonably be contended that provision ought to be made for the possible early use of the Clyde ports by larger and more capacious vessels than at present. Admitting this, there is every justification for the construction of a large modern graving dock, and not less for the provision of all the other facilities specified, in order that Glasgow may maintain and enhance its reputation as one of the leading ports of Great Britain.

Indian Port Expansion

According to an announcement in the Indian Press, a Committee of the War Transport Department of the Government of India has been considering the feasibility of extending and amplifying the port accommodation on the Indian coastline, principally on the Eastern side, and has made a recommendation for the enlargement forthwith of certain ports, viz., Madras, Vizagapatam, Cochin and Chittagong, so as to adapt them to an anticipated increase in trade during the coming years.

It is gathered from the report that the Committee is also in favour of the development of some of the smaller ports on the Coromandel Coast, though this is subject to the growth of local industries. Physically, there are considerable difficulties to be overcome, not only in forming, but in maintaining, satisfactory harbourage along the great alluvial tract which constitutes this coast; but with patience and engineering resource, these difficulties have, in several notable cases in the past, been overcome, so that they are by no means insuperable. In fact, physical difficulties have had to give way to the requirements of commerce.

Although generally satisfied as regards the trade outlook, the Committee have found themselves hampered by the lack of adequate and up-to-date information and statistical data relating to the ports under consideration, and they have had to fall back on pre-war figures. In the case of seven selected large ports, the annual cargo tonnage handled during the year 1939-40 was over 20 million tons , but during the war these same ports handled anything up to 25 million tons. In addition, a large tonnage was dealt with at small ports, where there were no facilities for berthing large ocean-going vessels.

The Committee have felt justified in coming to the conclusion that the future volume of trade will be much greater than in 1939 and they have accordingly adopted this view in their Report and have recommended, as stated above, that the port facilities of India should be immediately increased, including the formation of some new ports, though the proposed location of these is not specified.

South Wales Ports and Free Trade Zones

Chambers of Commerce and other bodies interested in seaport operation in South Wales are much exercised at the present time by the loss of trade resulting from the cessation of hostilities in Europe, whereby many ships' cargoes, hitherto handled locally, have tended to revert to their pre-war ports of service. According to official returns, the general trade of the Welsh ports dropped by 20 per cent. last year, falling from 15¼ million tons in the previous year to 12 million tons in 1945. Coal exports, amounting before the war to 13 million tons per annum, shrank to 4,900,000 tons in 1945, as against 5¼ million tons in 1944.

There is, accordingly, much searching of heart to find a means of arresting further extension of this slump, though it has to be remembered that the Welsh ports prospered during the war at the expense of ports on the Eastern Coast, the situation of which was too hazardous for the maintenance of their normal operations. Naturally, these ports are seeking to regain as much as possible of their former trade.

Among the suggestions put forward to save the situation, from the Welsh point of view, is that of Mr. R. Hugh Roberts, formerly Regional Port Director of the South West Area, for the establishment of a series of Free Ports, as they are termed, in Cardiff, Swansea and Newport. Readers of this Journal will be fully acquainted with the scope and limitations of Free Ports, and Free Port zones. They can be of little or no service for the general bulk of imports into a country. Principally, if not altogether, they are useful only in connection with the re-export trade, enabling commodities to be received without payment of Customs duties, either for temporary storage until taken across the Customs' boundary, or for re-shipment abroad, with or without intermediate manipulation.

Although Free Port Areas have long been in existence at the European ports of Hamburg and Copenhagen, and have recently been established at New York and Mobile (the latter abandoned later), and have been advocated under the Celler Act for other American ports, they are not in evidence as yet in Great Britain, where the system of Bonded Warehouses has, so far, sufficed to serve the requirements of the re-export trade.

The Port of British Honduras

One of the first obligations of the Court of Justice of the recently established United Nations Organisation will be to deal with the disputed sovereignty of British Honduras, which has long been a bone of contention between the British Crown and the Republic of Guatemala. Except in one respect, it does not appear to be a very attractive territory, the exception being due to its valuable products of dye wood and mahogany. There is only one port in the country of any size: Belize, which is an alternative designation for the whole colony of British settlers, who occupy an area of about 7,500 square miles.

With the political question at issue, this Journal is not concerned, but as regard the general issue, it is of interest to note that the coastline is not propitious for navigation. The approach thereto is both difficult and dangerous and lies through coys and coral reefs. The town of Belize, at the mouth of the river of that name, has less than 10,000 inhabitants, though the normal number may be more than doubled during the Christmas season when the mahogany cutters arrive.

The harbour accommodation at Belize is of an inferior order. The depth of water varies from 2½ to 4 fathoms, with only 6 feet alongside the quays. Vessels ordinarily anchor about a mile away and discharge their cargoes into barges for conveyance ashore. Apparently, therefore, British Honduras is a possession of no great importance, apart from its exports of logwood, mahogany and cedar. There is, however, some trade in tropical foodstuffs and fruit.

British Shipbuilding Returns

Though not a matter for exuberant congratulation, the Quarterly Shipbuilding Returns recently issued by Lloyd's Register of Shipping for the Quarter ended 31st December last are none the less distinctly encouraging. The tonnage under construction in Great Britain and Ireland is 116,567 tons more than that which was in hand at the end of the previous quarter and 471,105 tons more than the tonnage being built twelve months ago. It is interesting to note that of 36 vessels of 10,000 gross tons and over, two steam-propelled vessels were in the 25,000 to 30,000 tons class, and while there were 22 vessels, motor-driven, between 10,000 and 15,000 tons, there were none above that limit.

Compilation of information respecting the shipbuilding industry throughout the world is not yet possible, but in any case it has to be recognised that British shipbuilders have considerable arrears of tonnage to make up before the British Mercantile Marine can reach its pre-war standard. Still, in view of the national record for enterprise and determination, there is every reason for looking forward to a satisfactory recovery of the ground lost during the war years. There is even hope that in the not too distant future the peak of supreme leadership may be once more attained.

The Port of Belfast

Northern Ireland's Great Seaport

By JAMES ALEXANDER, M.Inst.T.,
General Manager and Secretary, Belfast Harbour Commissioners.

Last Century Developments

APPROACHED by a long and tortuous channel, unnavigable except by the smallest vessels and then only at high tide, and possessing a few landing places for goods, such was the Port of Belfast in its early history and such it remained until practically the middle of the 19th century.

Its trade during that time considerably increased and to meet the demands of that trade the first attempt to give Belfast uninterrupted and unimpeded access to the sea was made. This was accomplished by cutting a straight deep water channel, across the tortuous bends of the River Lagan, reaching from the quays of the town to the deep waters of Belfast Lough, a distance of about 5 miles. The work was executed in three stages. One stage was completed in 1841 and the other two in 1849 and 1891. This channel was named the Victoria Channel in honour of Her Majesty Queen Victoria and opened in 1849.

The provision of this channel was the most important development which up till then had taken place in the history of the port, and was an epoch-making event in that it provided the key to the entire subsequent development of Belfast Harbour.

The second stage in the work of cutting the channel to the sea was authorised by the Belfast Harbour Act of 1847. That Act also constituted the present body which now controls the destinies of the port, so that they have not yet been in existence for 100 years.

Under its wise and far-seeing administration the Port of Belfast has developed from insignificant beginnings, and to-day ranks amongst the ports of the United Kingdom in the fifth place.

Located at the head of Belfast Lough, a natural inlet of the sea about 12 miles long on the north-east Coast of Ireland, the port constitutes an ideal ocean terminal. It is on the great Transatlantic routes and its position in relation to Great Britain, from which it is not far distant, and the Continent of Europe make it an ideal centre for the distribution of goods. The long capacious lough, which is practically land-locked, and the deep-water channel leading therefrom make the harbour safe and most accessible.

The port itself, with its three wide straight channels, dredged to a depth of 31-ft. 6-in. at ordinary high water, penetrating deeply into the City of Belfast, has a lay-out extremely simple and well-balanced. Added to this, the tidal range is only 9½-ft., so that dock gates are unnecessary and vessels can proceed to and from their berths without experiencing the delay unavoidable at ports where docking is possible only at favourable states of the tide.

The equipment and facilities of the port are wholly adequate for dealing with all classes of ships' cargoes.

Record of the Port Under Late Chairman

Sir Ernest Herdman, D.L., who was a Harbour Commissioner for over 41 years, during the last 19 of which he was Chairman of the Board, retired from that important position in September last. He was succeeded by **Mr. John McCaughey,** who has been a member of the Board for over 23 years and who, on his election to that high position, gave the following account of the port's activities:—

"The process of development which has raised Belfast to its present position amongst British ports has been spread over a period of almost 100 years, but it may not be considered invidious to say that, during the last quarter of that period, extraordinary progress was made and most of which took place under the leadership of Sir Ernest Herdman, D.L., the former Chairman of the Board.

"The Harbour Commissioners and the whole community are under a lasting debt to the ex-Chairman, who throughout his 19 years in the Chair and, in particular, during the past war-years, never spared himself, but gave almost his entire time to the advancement of the interests of Belfast Harbour.

"In all his work as Chairman, Sir Ernest Herdman enjoyed the co-operation and whole-hearted support of the late General Manager—Mr. M. J. Watkins, C.B.E.—whose recent death we still deplore.

"Of these developments, the following special features stand out:—

(1) "The construction of additional wharves for the shipbuilding industry;

(2) "The purchase and erection on Thompson Wharf of a 150-tons electric crane for shipbuilding and ship repairing;

(3) "The reclamation on the County Down side of the Harbour; formation of land (400 acres) and the construction of Belfast Harbour Airport which, apart from introducing civil aviation to and from the port, was largely responsible for the establishment of the aircraft industry in Belfast;

(4) "The joining up and deepening of the quays on the west side of Dufferin and Spencer Docks, thereby making a continuous line of 1,300 lineal feet of quayage with a depth of 30-ft. at ordinary low water;

(5) "The provision of an oil jetty for the accommodation of tankers and the establishment of oil storage depots at Connswater;

(6) "The cutting of the Herdman Channel and the construction of the Pollock Basin and Pollock Dock, which enabled the large grain establishments of Messrs. Joseph Rank, Ltd., and Messrs. R. & H. Hall, Ltd., to be erected. In addition to these, there is also the large grain silo of Messrs. W. & R. Barnett, Ltd., at Spencer Dock.

Belfast's War-Time Record

"This brings us up to the commencement of the war, when a veil of secrecy was imposed on the activities of the harbour. Now that restriction has been lifted, it is possible to reveal to the public some interesting facts regarding what went on during those years.

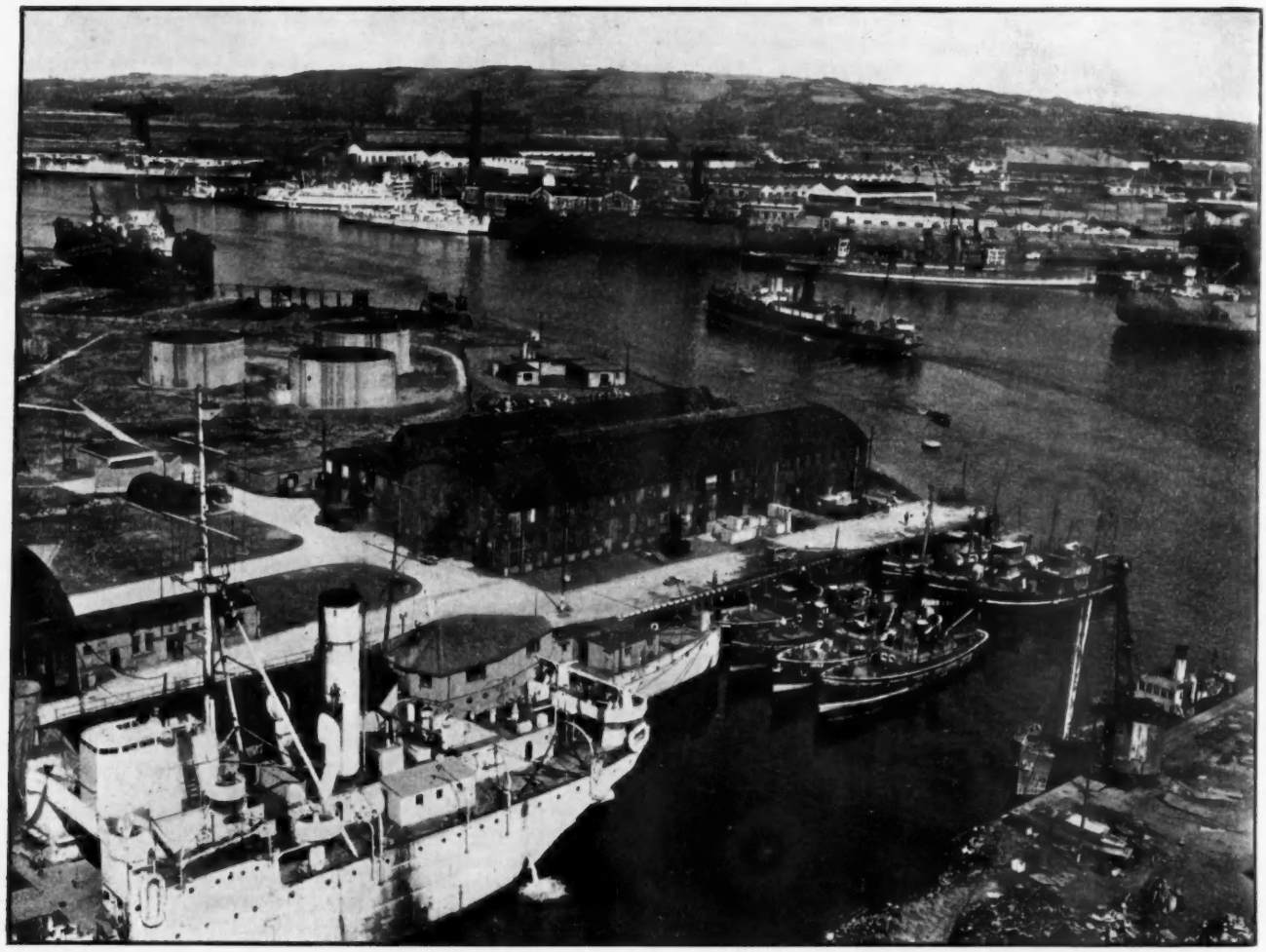
"Belfast being ideally situated and up-to-date in its berthage for ships of all dimensions, and in its facilities for the reception of cargoes and their distribution, it was not surprising that Belfast was included in the ports which the Imperial Parliament had earmarked for Government use in the event of war.

"Immediately on the outbreak of war, black-out regulations, not only in the Inner Harbour, but also in the outer approaches, were enforced, and the working of the port, especially at night, presented many difficulties, but I am pleased to say we were able to overcome these difficulties, as far as was reasonably practicable.

"Belfast fitted into the Government's plan so well that almost immediately a naval base was established in the port.

"Later, Admiralty requirements increased, and so great became their demands that practically the whole of the Pollock Dock system, as then existing, was used almost exclusively by Naval vessels. As the war progressed so the requirements of the Naval Base in Belfast Harbour increased, and the Harbour Commissioners, by arrangement with the Admiralty, constructed a long line of dolphins on the east side of the Herdman Channel for the berthing of small Admiralty craft.

Port of Belfast—continued



Victoria Channel showing (in background) Fitting-out Wharves, etc.

" The allocation to the Admiralty of the Pollock Dock system created difficulties in finding accommodation for commercial ships, which were, to a large extent, operating under the control of the Ministry of War Transport, and in view of the increasing requirements of commercial ships, the Commissioners, in collaboration with the Ministry of War Transport and the Government of Northern Ireland, provided additional accommodation in the harbour by constructing a large deep water quay on the west side of Herdman Channel and by completing the extension of the Pollock Dock system, thereby adding 2,000 lineal feet of deep water berths to the port accommodation.

" When these new quays had been brought into commission, the Harbour Commissioners proceeded to equip them with sheds and cranes of the most modern type.

" Later it became necessary to extend the Naval Base, and the Admiralty, at their own cost, provided additional dolphins on the East side of the Herdman Channel and in Musgrave Channel which might rightly be termed a naval dockyard. The port was used so extensively by the Admiralty that on occasions as many as 82 naval craft were in the port at one time.

" With so much accommodation allocated to Admiralty and Military requirements, it is evident that the remaining sections of the harbour must have been taxed to their utmost and the fact that so much trade was handled reflected the greatest possible credit on the Commissioners and on the facilities of the port.

" In the early stages, the Airport was under the control of the Air Ministry, but later as the Battle of the Atlantic developed, it was taken over by the Fleet Air Arm. A special deep-water wharf was constructed alongside the Airport and escort carriers were thus enabled to load direct from the Airport fighter aircraft of the Fleet Air Arm, and also discharge their fighter aircraft direct on to the Airport, for servicing, repairs, overhaul, etc.

" Belfast Harbour Airport is unique in having this deep-water berthage alongside, capable of accommodating the largest type of aircraft carriers.

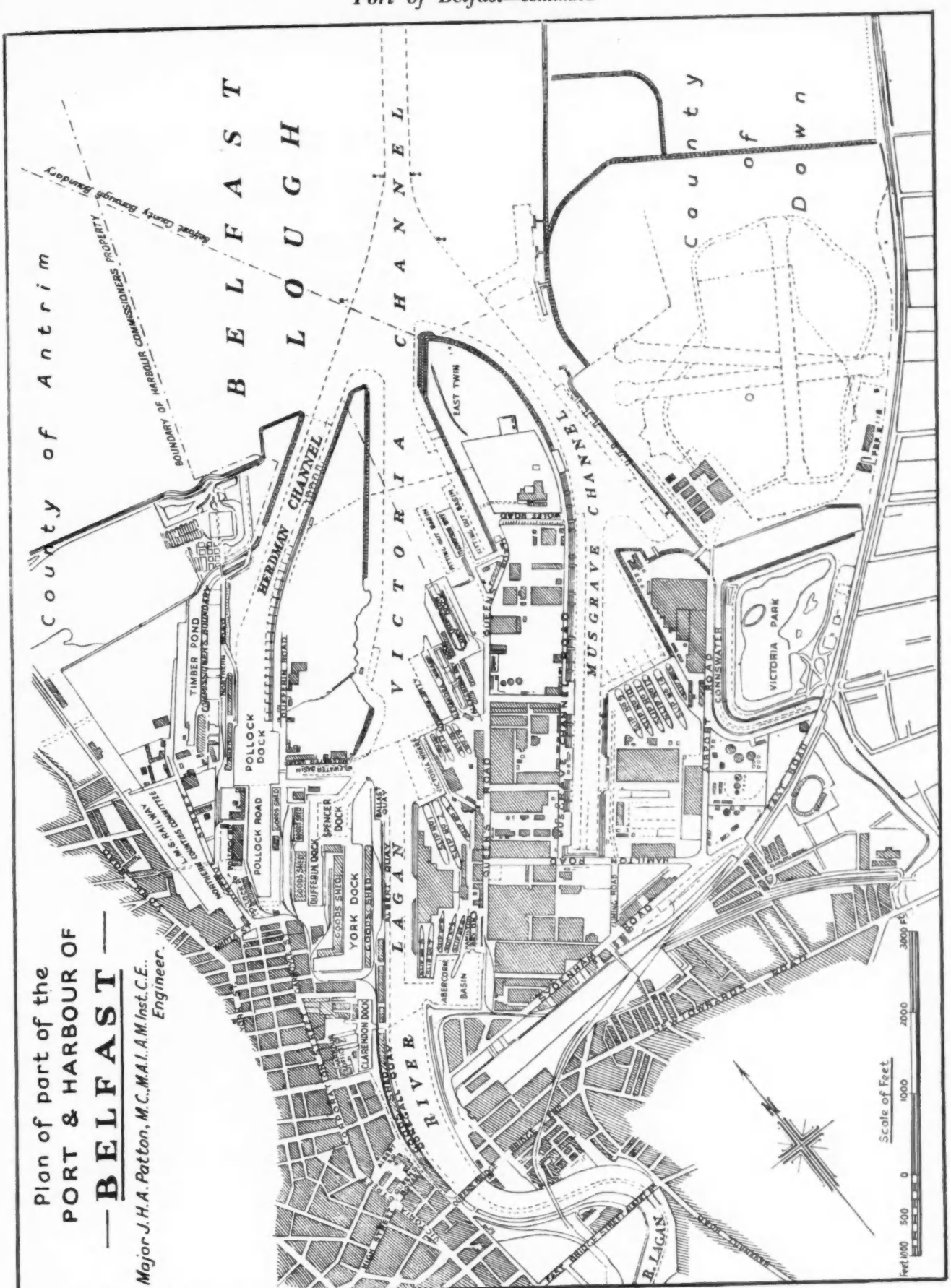
" The proximity of the Airport to the works of Messrs. Short & Harland, Ltd., was of great advantage to that Firm in testing aircraft constructed by them, and enabled them to make a valuable contribution to the war effort.

" No account of the war-time activities of Belfast Harbour would be complete without reference to the Shipbuilding Industry, and to the part which the Firm of Messrs. Harland & Wolff, Ltd., played in the war effort. It can be proudly said that the ships built at Belfast and those re-fitted or repaired were found on the seven seas of the world, and in all theatres of sea warfare, in which they played a gallant part.

"It was not to be expected that a port the size of Belfast playing such an outstanding part in the war, and especially in the Battle of the Atlantic, could escape the notice of the enemy. In 1941 several air attacks were made on the port and city, the former being principal target. Serious damage was caused to the Board's sheds, quays and cranes; several ships in the harbour being sunk.

" With characteristic promptitude the Harbour Commissioners tackled the problem of the restoration of their property. Sheds

Port of Belfast—continued



Port of Belfast—continued

were erected to replace those destroyed; quays, roadways and other facilities were restored and the work of the harbour was carried on.

" A special feature of the war-time facilities of the port was a Floating Dock established by the Admiralty, principally for the repair of H.M. destroyers and smaller types of vessels of H.M. Navy.

" Appreciation of Belfast as a Naval Base and in the war effort generally has been expressed of late by some high officers of State, but the full significance will be revealed only when the history comes to be written of this Province to which our port is the gateway.

" It is appropriate to recall that the first troops which arrived from the United States for service in the European theatre of operations, landed at the Port of Belfast on 25th January, 1942, and were followed by other large contingents of troops and equipment, and the facilities of the port were placed at the disposal of the American Authorities not only for the landing of such troops and equipment, but for their subsequent embarkation to fighting zones.

" The transition period through which we are now passing presents many acute problems for us as a Board. Several schemes of re-organisation and planning are at present under consideration by the Commissioners and whilst development and planning within the Estate are matters for the Commissioners, any planning of the Board's property where it impinges on that of the Belfast Corporation will be carried out in collaboration with the Corporation as part of the Town Planning Scheme.

" The curtailment of import licences and, in particular, the repercussions likely to be felt from the suspension of Lease-Lend cannot but have a serious consequence on our revenue from overseas traffic. This year the tonnage of the port already shows a large decrease as compared with pre-war, and the reduced production of coal in Great Britain consequent largely on 100,000 miners less being in the pits than before the war will undoubtedly re-act on the trade of the port.

" As those who served on this Board in previous generations surmounted their difficulties, so the Commissioners have every confidence that the same spirit of co-operation with the various interests that make for the upbuilding of our harbour will enable us of to-day to steer our course wisely towards an era of stabilised peace, which we hope is in the not too far distant future."

Statistics of Accommodation and Trade

Belfast Harbour covers an area of 2,760 acres of land and water, with berthage of over 6½ miles and sheds covering an area of 22 acres.

There are 15½ miles of railway, connected with the railway systems of the country, and a good road system.

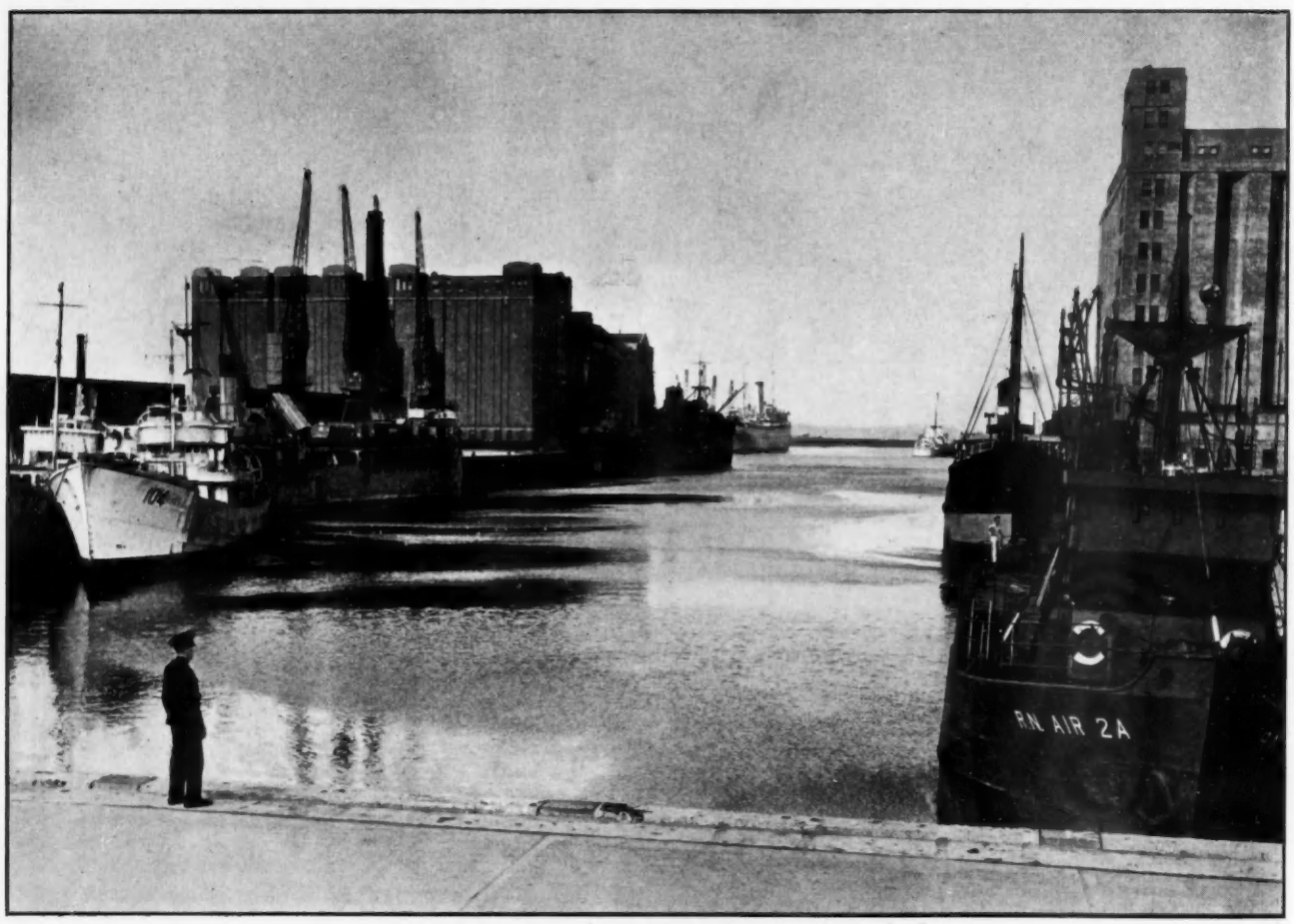
There are five graving docks of varied capacity; the Thompson Dock being 887-ft. long and another, the Alexandra Dock, over 800-ft. long.

Up to 70,000 tons of shipping could be accommodated in these graving docks at one time.

The port is well equipped with modern electric cranes mainly for use in connection with the discharge of coal, of which about 1,600,000 tons are imported annually.

For special lifts, three electrically-operated cranes of 150, 120 and 30-tons capacity respectively have been provided.

At the Cross-Channel berths, 16 transporter cranes ranging in capacity from 1 to 10 tons have been provided.



Pollock Dock and Basin

Port of Belfast—continued

Figures of tonnage arrived and cleared and of imports and exports are given below:—

Vessels arrived and Cleared.

Year.	*Net Register Tonnage.*
1938	8,996,221
1939	8,884,905
1940	8,082,567
1941	8,226,252
1942	8,563,384
1943	8,048,825
1944	9,689,670
1945	8,723,436

Imports and Exports.

Year.	*Tons.*
1938	3,615,564
1939	3,722,720
1940	3,937,036
1941	3,881,917
1942	4,197,390
1943	4,008,421
1944	4,135,279
1945	3,965,750

MR. JOHN McCAUGHEY
Chairman of the Belfast Harbour Commissioners.

New Chairman of the Belfast Harbour Commission.

Mr. McCaughey has been a member of the Belfast Harbour Commissioners for over 23 years. He has served on most of the Standing Committees and Sub-Committees for many years past and is now also Chairman of the Port Emergency Committee. Having a personal and intimate knowledge of the harbour as a large importer throughout his entire business life, he has been Chairman of several Trade Associations in past years.

He had a large share in establishing the Ulster Association which did such excellent propaganda work after the setting up of the new Government of Northern Ireland, and later in the launching of the Ulster Tourist Association.

He is Chairman of James McCaughey & Co., Ltd., Flour and Feeding Stuffs Merchants and Linseed and Oilcake Millers, and of J. B. Ferguson, Ltd., Automobile Engineers.

Mr. James Alexander, who was appointed General Manager and Secretary of the Belfast Harbour Commissioners on the death of Mr. M. J. Watkins, C.B.E., in August, 1945, entered the Commissioners' service in January, 1908. After experience in the Harbour Master's and Rates on Goods Departments, he was transferred to the personal staff of the then General Manager and Secretary, Mr. (later Sir) David J. Owen. He became Chief Committee Clerk in February, 1922, and on the retirement in

MR. JAMES ALEXANDER, M.Inst.T.
General Manager and Secretary, Belfast Harbour Commissioners.

1928 of the Secretary's Chief Assistant, he was appointed to that position. He received the designation " Assistant to the General Manager and Secretary " in January, 1940, and, in consequence of Mr. Watkins' absence through illness, was appointed " Deputy General Manager and Acting Secretary " in June last.

Mr. Alexander has been Deputy Chief Executive of the Port Emergency Committee since its inception during the war years, and is a member of the Institute of Transport, being on the Committee of the local section. He has recently been appointed Chief Executive.

Aberdeen Harbour Improvements.

The installation of coal handling plant at the Albert Quay and the provision of a deep water berth at Matthews Quay, Aberdeen, have been sanctioned by the Ministry of War Transport. It will be recalled that there was criticism of the lack of coal handling equipment at Aberdeen in the report of the White Fish Committee of the Scottish Council on Industry.

These two developments form part of a five-year plan of extension and development which will cost in the region of £500,000. The coal handling equipment will cost some £90,000, while the deep water berth will cost £98,000.

In sanctioning this development the Ministry has indicated that it is without prejudice to the question of any grant which may be given for this or future work. The Board has agreed to suspend development on any of the remaining work approved under the five-year plan until expert opinion has been obtained as to the effect of such developments on the channel, the roadways and the harbour, in view of the great developments in recent years in the science of sea effect on harbour construction work.

Sheet-Piling in Maritime Works

By SAVILE PACKSHAW, B.Sc. (Eng.), M. Inst. C.E.

(Continued from page 208)

Discussion

Mr. F. M. G. Du-Plat-Taylor observed that in 1904 he had had occasion to repair the Brunswick wharf at Blackwall, which was built in about 1800, and he had been surprised to find how good the cast iron was. It was not crystalline and appeared to be in a perfectly sound condition. Some of the piles had gone, but it was interesting to know that a wall like that could last so long, as cast iron usually had a shorter life.

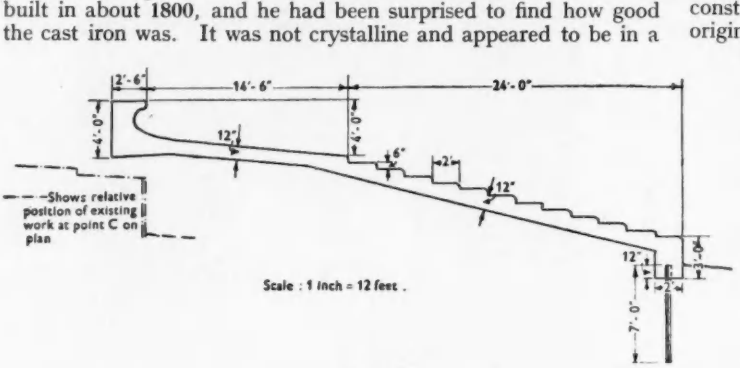


Fig. 10

With regard to the wharf at Rouen, on wooden piles, he wondered what happened to the air which was trapped at the back of the wall, because the wall projected a good deal lower than the ground at the back. Considerable air pressure would be developed as the tide rose behind the wall, the air being caught in that recess.

About seventeen years ago he had built a sea defence wall of the type illustrated in *Fig. 9*, more than a mile in length, with a varying number of steps *(Figs. 10* and *11)*. Beneath the toe, or lowest step, a line of steel sheet-piling was driven down into the clay. The wall was of reinforced concrete. The number of steps varied according to the inclination of the beach.

The sheet-piling was driven in a continuous line, in several sections.

The contractors had a good deal of difficulty in keeping the piles upright. The difficulty of creep was overcome by pitching sets of seven or eight piles together, and then driving each pile for a short distance successively. If that had not been done, the creep would have necessitated the insertion of a tapered pile every 200 or 300 feet. It was very important that the piling should be watertight, as the stability of the whole wall really depended upon that. It sometimes occurred, in a heavy on-shore gale, that the beach was washed out to depth of 4 feet or 5 feet; that would temporarily uncover part of the piling, and if the latter was not watertight a current would be set up through the piling which might gradually wash out sand from beneath the wall, and so cause cracking or collapse, because the wall was only 12 inches thick.

In most cases in which gales removed the sand and shingle in front of the wall a subsequent change in the weather replaced it. But in some cases a permanent loss of material occurred, and the advantage of that design was that the remedy in such a case was merely to extend the wall. The requisite number of additional steps were constructed in front of the original toe and another row of sheet-piling was driven farther out, and the wall could be extended forward to an almost unlimited degree.

From that point of view, the boxing with steel piling was an essential feature, as the whole wall did not have to be scrapped, because the foundations were not exposed or distributed.

That application of steel sheet-piling was rather important, because in many places light walls of that type could be applied for the protection of the foreshore, where for financial reasons heavier walls of the gravity type could not be used.

Mr. Maurice Nachshen described a pier at Maryport designed to protect the harbour entrance channel from being filled by a strong littoral drift of shingle. The lower part of the pier was constructed before dredging was carried out, by enclosing the original beach material between two rows of steel sheet-piling, battered at 1 in 3 and connected by tie-rods above beach-level. The lengths of the piles were from 20 feet to 30 feet on the channel side and about 16 feet on the other side. The superstructure was of concrete. After dredging, the sheet-piles on the channel side were exposed over a span of about 8 feet which, though short, was heavily surcharged by the superstructure, producing heavy moments and shears. There were no walings to the wall. Tie-rods were placed at every trough, 2 feet 9 inches apart centre to centre. Another interesting feature was that the tie-rods were placed in 6-inch casings, so that the superstructure could settle without danger of shearing the ties at the sheet-piles. In many places the tie-rods were at an inclination and the washers were made with a spherical seating, so that the ties could be inclined at various angles and the nuts still have a good bearing.

Another rather unusual case arose at Galway, where a small sheet-pile wall was constructed which was not driven but was anchored to rock.

The piles were of the *Ougree* type and were welded at alternate interlocks. When filling with stone was begun, the deflexions were found to be much greater than had been expected. Careful measurements were made, and it was found that the deflexions corresponded very closely with calculation based on the minimum moment of inertia of the piles about an inclined neutral axis.

One lesson to be learned from that was that in the ordinary form of sheet-pile construction considerable shear resistance was developed from the friction of the piles in the ground at the bottom. It was also necessary to look very carefully at the shear resistance at the top and to provide for it by waling arrangements or by welding. Research was desirable into that aspect of the matter.

Developments might well be made in sheet-piling. The main requirement was to obtain stronger sections than were now available, to enable the ordinary straightforward wall, such as that illustrated in *Fig. 2*, to be built with heights of up to 70 feet, so that it could be used in deep tidal waters. Relieving platforms and the like were really devices to reduce the bending moment of the piling. Perhaps something might be devised to enable tie-rods to be attached at lower levels, possibly below water.

Another development might be the construction of dolphins made of boxes of sheet-piling, perhaps of cylindrical form, filled

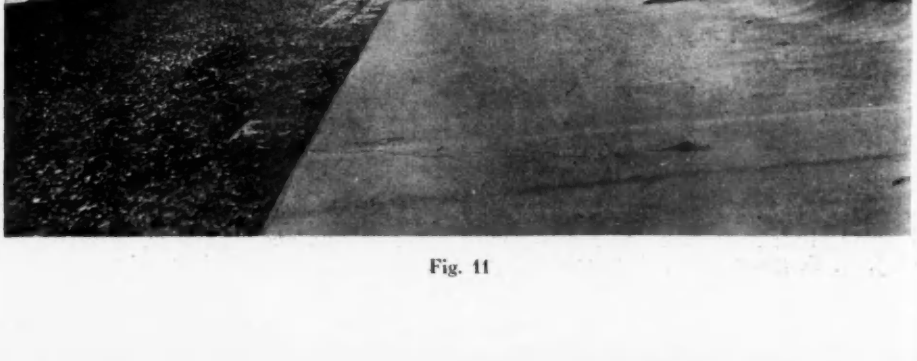


Fig. 11

Sheet-Piling in Maritime Works—continued

with stones or earth. He would also like to see non-corrosive steel of a rather better quality, with higher resistance than the steel used at present, and produced at a reasonable cost.

Mr. J. E. G. Palmer observed that the Author had made the problem appear very easy, but it was not really so. Considerable trouble could be experienced in driving sheet-piling, and a contractor using sheet-piling for the first time could get into very serious difficulties. Fortunately the Author had realised that. Mr. Palmer suggested that anyone who was going to use sheet-piling should first obtain a copy of " The B.S.P. Pocket Book." One difficulty mentioned in that book was that the piling had a tendency to get out of plumb as it was driven, and several pages were devoted to describing various means of overcoming that

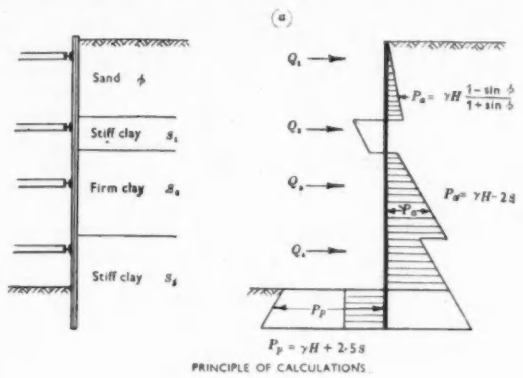


Fig. 12.—Earth-Pressure Calculations and Observations, Chicago Subway

difficulty, one of which was to pitch the piles in panels of several at a time. Mr. Palmer had had to drive a considerable length of sheet-piling in the construction of a slipway for trawlers at a port on the east coast, involving a cofferdam of a rather unusual shape, 300 feet long. B.P.3 section was used, and three specially made tapered piles had to be driven in the length of each side to keep the piling plumb.

Steel box piles were excellent things, being very easy to handle, but the question often arose whether or not to provide them with a toe. The excellent handbook to which he had referred above did not contain any details of a toe to a box pile.

With regard to the very vexed question of the length of life of sheet-piling, the Author had stated, very fairly, that: " There is some uncertainty about its durability, especially of light sections, when an effective life of more than a few decades is required." Could the Author give some actual examples of sheet-pile walls that had lasted a longer or a shorter time than that?

Mr. A. W. Skempton observed that he wished to support the Author's plea for more field measurements. As the Author had suggested, there were several very interesting possibilities in connection with sheet-piling, and from a technical point of view there did not appear to be much difficulty in measuring the anchor tie pull and the earth-pressures on the piling.

The results of such field observations should, however, be correlated with the results of borings and tests to determine the mechanical properties of the strata, for only with such data could the full value of the observational work come to light. The object of the field measurements was not only to determine the actual stresses in any design, but also to check existing methods of earth-pressure calculation; and from a broad point of view the latter object was the more important.

The need for field measurements was particularly urgent with clay strata. Clays, on the whole, presented a more difficult problem than sands and, although several theories existed concerning the earth-pressures exerted by clays, no real confidence could be felt in those views until they had been tested against field observations on full-scale engineering structures.

One of the very few examples of such observation was presented by the work recently carried out in the Chicago subway,* where, as shown in *Fig. 12* (a), cuts about 35-45 feet deep were made through a layer of sand, followed by stiff clay and then by a thicker bed of soft clay which, near the bottom of the cut, became rather stronger. Careful sampling and testing were carried out to determine the stratigraphy and the shear strength of the clays; and a very large number of borings were made, usually about 300 feet apart centre to centre, along the whole length of the excavation works.

Fig. 12 (a) also showed a typical calculation of the active and passive pressures, based upon Bell's equation† with the assumption that the angle of shearing resistance was zero in the clays. Theoretical reasoning existed for supposing that that assumption was substantially correct for clays, in those cases where the opportunity for water-content changes in the clay was small. In Chicago that was clearly true, for the cuts were excavated quite rapidly and the observations could be made only over a short period of time.

From the calculations, the difference could be found between the total active pressure and the total passive resistance, and that difference could be compared with the sum of the measured loads in the struts. The two results should be equal if the theories were correct.

In *Fig. 12* (b), that comparison was made for seven typical sites along the length of the excavation, and the agreement between calculations and observations appeared to be reasonably close. Naturally, other values of ϕ were chosen; but only with very small values, certainly less than 5 degrees, could any measure of agreement be obtained.

Observations of that nature were therefore obviously of the greatest importance, for they could lead to the most valuable checks on the theories, as in that particular instance where the rather revolutionary idea that ϕ could equal zero in clays was confirmed. But many more field observations were required before the whole problem would become clear, and the example of the Chicago work should be repeated.

The probability that clays behaved, from the point of view of stress conditions, as if they were frictionless (provided no water-content changes could take place) was of very considerable practical significance. *Fig. 13* illustrated a typical example of a sheet-pile wall. On the assumption that $\phi = 0$, the active and passive pressures at the dredged level were,

$$= p_a \ \gamma H - 2s$$

and

$$p_b = 2s$$

where γH denoted the weight of strata above that level, making due allowance for hydrostatic uplift below low water, and s denoted the shear strength of the clay at dredged level.

* R. B. Peck. Proc. Amer. Soc. Civ. Engrs, vol. 68 (1942), No. 6, p. 900.
† A. L. Bell. Min. Proc. Instn Civ. Engrs, vol. cxcix (1914-15, part 1), p. 233.

Sheet-Piling in Maritime Works—continued

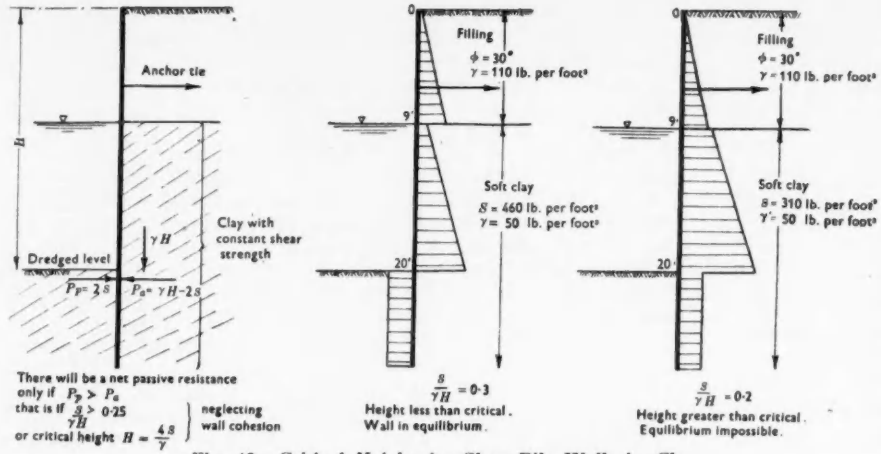


Fig. 13.—Critical Height for Sheet-Pile Walls in Clay

Clearly if there were to be a net passive resistance in front of the wall

$$p_p > p_a$$

or

$$4s > \gamma H$$

or

$$\frac{s}{\gamma H} > 0.25$$

In other words, if $\frac{s}{\gamma H}$ exceeded 0.25, a net passive resistance could be built up in front of the sheeting and equilibrium could be obtained by a sufficient penetration. But if $\frac{s}{\gamma H}$ were less than 0.25, no net passive resistance was possible unless the penetration were increased to include a deeper and stronger stratum of clay or sand. If, therefore, there was a thick layer of clay, the strength of which was less than $0.25\ \gamma H$ and remained appreciably constant with depth, it would be a very uneconomic procedure to use any ordinary anchored sheet-pile wall, and recourse should be made to another type such as the open-slope or the platform design.

The Lindholmen quay, in Gothenburg harbour, Sweden, formed an example of the open-slope type, *Fig. 14*. There the value of $\frac{s}{\gamma H}$ at dredged level equalled about 0.2 and the strength of the clay increased only slightly with depth. The open slope obviously increased the stability by removing a large triangular wedge of clay beneath the decking. In the platform type the overburden pressure γH at dredged level was reduced very appreciably by the weight of all soil above the platform, and stability might then be possible in a case where otherwise no net passive resistance could be developed. An example was shown in *Fig. 15*.

That conception was, perhaps, rather novel, but it was only one aspect of the new knowledge of earth pressures and soil mechanics. The design of quay walls, even in clays, was rapidly becoming a rational procedure, but reasonable certainty in methods could be brought about most surely by field observations, borings and sampling. Should any opportunities for that work arise, the Building Research Station would be very grateful for the opportunity of carrying out the measurements.

Mr. C. Peel observed that during recent years it had been necessary to modernise a number of quays in the Port of London, where the conditions for improvement works of that sort were rather peculiar and different from those of entirely new constructions on open sites. The work had often had to be carried out quickly, in order to minimise interruption to traffic, and often over water or in water or from existing quays. The type of construction that had been developed involved the use of reinforced concrete cylinders in an open type of quay with pre-cast concrete piles driven therein, filled with mass concrete, and reinforced-concrete sheet piling at the back to retain the forward thrust of the backing, and heavy reinforced-concrete coping beams and deck, with the minimum of separate beams.

Two quays of that type in the Victoria Dock were described by Mr. R. R. Liddell, M. Inst. C.E., in a Paper presented before The Institution in November, 1938*.

In one the old timber sheet-piling had become very decayed, and it had been necessary to renew the quay. A good many years before the reconstruction of the quay some reinforced-concrete sheds had been built at the back, and at that time ties were left projecting from the pile caps, so that ultimately, when some form of quay was built to replace the old quay, the work could be tied on to the newer foundations.

The new quay consisted of a single row of reinforced-concrete cylinders, 24 feet apart, with concrete piles driven therein into a gravel bottom. The depth of the water was about 31 feet. The reinforced-concrete sheet-piles were 35 feet in length, and 24 inches by 12 inches in section. As it became necessary to cut the old tie-rods in order to prevent any subsidence, the sheet-piles were tied back to the shed pile caps. There was a heavy coping beam, transverse beams with a very thick deck, and no other beam work at all.

A lantern-slide showed a typical section of the second quay, on the north side of the dock. The structure, about 3,000 feet in length, was entirely self-supporting. It consisted of three rows of reinforced-concrete cylinders, with reinforced-concrete piles therein. Heavy portal beams connected the three rows. The reinforced-concrete sheet-piles at the back of the quay were 14 inches by 14 inches in section and 45 feet long. The construction included a capping beam, a heavy coping beam, and a thick deck, with a central longitudinal beam and intermediate transverse beams. As much pre-cast work as possible was used for

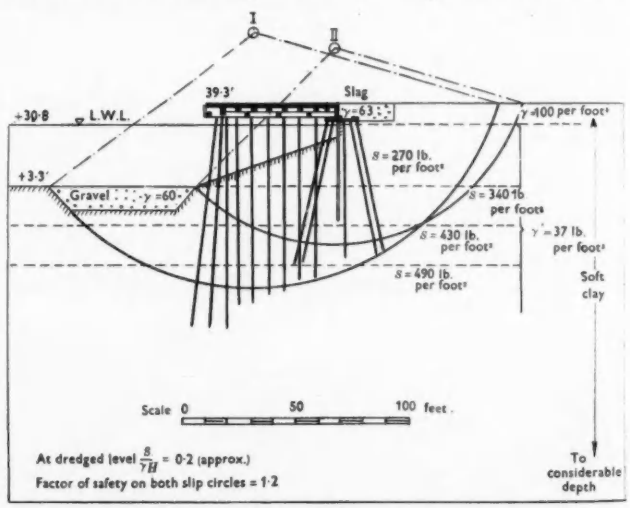


Fig. 14.—Lindholmen Quay, Gothenburg

the soffits. For the most part the work was carried out in the water; that was to say, there was no dry land from which to work and the work was done from staging. The dock bottom was deepened and dredged gravel was deposited on the site before the

* "Improvements at the Royal Docks, Port of London Authority." J. Instn Civ. Engrs, vol. 10 (1938-39), p. 283 (Jan. 1939); see Fig. 9, p. 299, and Fig. 19, p. 307.

Sheet-Piling in Maritime Works—continued

quay was built. Subsequently the front slope was finished off. Reinforced-concrete sheds had subsequently been built at the back, involving large numbers of piles, but, in spite of all the displacement and vibration, there had been no movement whatever of the quay. Ties were left projecting from the portal beams and they were tied into the shed foundations. The whole of the

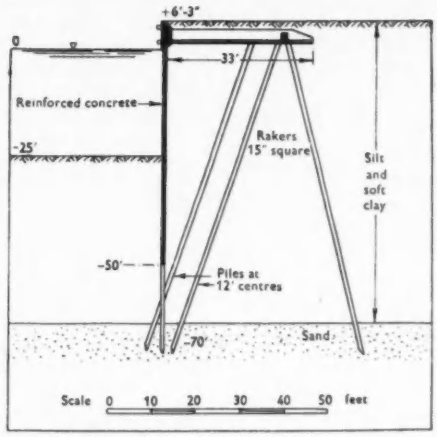


Fig. 15.—Platform Type of Quay Wall at Nörresundby, Denmark

ground was very good gravel, so that the work did not give any opportunity of proving or disproving clay theories. At first it was thought that difficulty might be experienced in driving the sheet-piles through the gravel, but actually the contractors scooped out a hollow in the deposited bank and no difficulty was experienced.

The piles were driven with a 4-ton semi-automatic hammer, and no difficulty was experienced in driving. The piles tended to lean, but in the gravel, instead of leaning forward in the same way as steel sheet-piling, they tended to kick forward at the bottom. A special tapered pile was made for each bay between cylinders and had simply to be dropped into position.

(To be continued)

Port of London Authority

Excerpts from Thirty-sixth Annual Report

Trade

The following tonnages of shipping used the wet dock premises of the Authority during the years ended 31st March, 1940 to 1945:—

	Year ended 31st March.	Net Register tons.
Foreign and Coastwise (Inwards and Outwards)	1940	25,781,996
	1941	8,518,008
	1942	6,197,006
	1943	4,187,580
	1944	7,950,666
	1945	*29,702,150

*** Note.—Includes operational traffic to and from the Continent.**

The tonnage of shipping entering the Dry Docks of the Authority during the years ended 31st March, 1940 to 1945, was as follows:—

Year ended 31st March.	Gross Register tons.
1940 ...	3,068,458
1941 ...	1,824,874
1942 ...	1,241,735
1943 ...	815,283
1944 ...	1,210,037
1945 ...	1,649,952

The tonnage of goods landed or received by the Authority for warehousing or immediate delivery, or for export, during each of the years ended 31st March, 1940 to 1945, was as follows:—

Year ended 31st March.	Imports. Tons.	Exports. Tons.	Total. Tons.
1940 ...	2,013,192	689,916	2,703,108
1941 ...	1,152,229	407,053	1,559,282
1942 ...	740,388	495,364	1,235,752
1943 ...	726,572	153,494	880,066
1944 ...	1,701,413	246,377	1,947,790
1945 ...	*1,353,272	*2,704,330	*4,057,602

*** Note.—Includes operational traffic to and from the Continent.**

Finance

The balance of borrowing powers unexercised at 31st March, 1945, amountetd to £1,206,691, as follows:—

	£	£
Total amount authorised		45,000,000
Borrowed:—		
(*a*) Port Stock issued and outstanding ...	36,677,106	
(*b*) Port Stock purchased and extinguished	1,613,352	
(*c*) Port Stock redeemed	17,499	
(*d*) Withdrawn from Stock Redemption Funds	5,485,352	
		43,793,309
Balance of borrowing powers unexercised ...		£1,206,691

The Capital Ependiture for the year ended 31st March, 1945, amounted to £63,166, the principal items being:—

	£
Construction of new quay, sheds, etc., North Side, Royal Victoria Dock	43,222
Purchase of mobile cranes, tractors, etc. ...	13,990

The following is a summary of the year's working:—

	£
Total Revenue	8,398,707
Total Expenditure	4,717,944
Balance of Revenue	3,680,763
Deduct—Items appearing in Net Revenue Account No. 8, e.g., Interest on Port Stock; Stock (Redemption) Fund charges, Provision for Income Tax, etc.	3,678,812
Balance (Surplus) for the year ...	1,951
Add—Appropriation from General Reserve Fund	217,410
Cr.	219,361
Balance (Deficit) brought froward from 31st March, 1944 ... Dr.	791,513
Leaving to be carried forward a deficit of ...	£572,152

The expenditure during the year on account of the General Fund for the Maintenance and Renewal of Premises and Plant and for Dredging was £18,032, and after transferring £180,000 from Net Revenue Account the balance standing to the credit of the Fund at 31st March, 1945, was £615,714, of which £430,277 is invested.

The War

The Port of London has survived the biggest crisis in its history. Its value to the country has made it a priority target of the enemy, but despite all forms of attack it has remained operative throughout the whole war period.

In August, 1939, The Minister of Transport appointed the members of the Port of London Authority to be the Port Emergency Committee for the district of London with the Chairman and Vice-Chairman of the Authority as Chairman and Vice-Chairman respectively of the Committee, and on the outbreak of war the Minister made an Order, viz., " The Control of Traffic

Port of London Authority—continued

at Ports Order, 1939," conferring powers on Port Emergency Committees to issue directions for regulating, facilitating and expediting traffic at Ports. The Committee appointed Sir Douglas Ritchie, M.C., to be Chief Executive of the Committee and throughout the period of the war have taken such action as has been necessary to ensure the efficient working of the Port.

At the outbreak of the war the Authority assumed full Civil Defence functions in the dock areas, and these services have been fully maintained by their own staff acting on a voluntary basis.

The River Emergency Service, a scheme providing ambulance vessels, attendant launches, speed boats, supply craft, etc., manned by doctors, nurses and volunteer and professional crews to meet any emergency occurring in the River or at riverside premises was organised by the Authority, the Ministry of Health bearing the running cost. Originally the Service as mustered on the outbreak of the war comprised 14 ambulance ships and 144 other craft with about 1,500 personnel, but as the requirements became clearer and the needs diminished the Service was progressively reduced in strength, a proportion being absorbed into the Thames Royal Naval Auxiliary Patrol. The Service was finally disbanded on the 31st March, 1945.

Enemy air raids on a large scale commenced on 7th September, 1940, and it was obvious that the dock areas were the main targets at the outset. Grievous damage was caused and many warehouses and other premises were destroyed, but at no time were the facilities of the Port to berth, load and unload ships or to handle the cargoes affected to any great extent, or was any vessel delayed for more than a few hours for this reason.

When traffic was transferred to other Ports, the Authority met many requests for various types of plant. Thirty electric cranes were sold to the War Office, 34 more were transferred away on hire, 11 locomotives were loaned and one sold, a floating derrick was sold, and numerous other items of smaller port equipment were made available. Certain floating plant units, the s.y. "St. Katherine," tugs, motor launches, barges, etc., were acquired or requisitioned from the Authority by the Government.

The Port of London played a major part in the preparations for the successful invasion of the Continent. Various sites were requisitioned for secret works, such as "Mulberry" and "Pluto," 75 per cent. of the concrete work for the "Mulberry" Ports being built on Thameside and in the Authority's docks. Lease-lend weapons, materials of all descriptions and foodstuffs arrived in ever-increasing quantities, and special preparations were made for the loading of military traffic. New roads were constructed, "hards" built for vehicles, and ramps cut into the quay walls to allow tanks, lorries, etc., to drive straight into the carrier vessels.

A sustained loading programme was arranged to follow up the invasion and to 31st March, 1945, this involved the shipment in the docks of 1,880,000 tons of stores of all kinds and 185,600 vehicles. The figures of vehicles in both cases do not include those driven direct into ships at the hards. At peak periods as much as 11,750 tons of stores and 370 vehicles were loaded in one day, sometimes requiring the services of 2,500 men.

Much marine salvage work has been done to keep the river and docks clear for shipping. Since the commencement of the enemy attacks on London up to 31st March, 1945, the Authority's Salvage Department raised 36 sunken ships, totalling 83,811 gross register tons and major assistance has been given to a further 46 ships of a total gross tonnage of 204,606. 157 tugs, barges and other craft have been raised in the docks and 183 from the river.

Throughout the whole period of the war, Sir Douglas Ritchie has discharged the duties both of General Manager of the Authority's undertaking and of Chief Executive of the London Port Emergency Committee. He has borne the heavy burden of responsibility thus placed upon him with conspicuous success and has gained the esteem and goodwill of all with whom he has come into contact in the working of the port. The Authority record their high appreciation of the services which Sir Douglas has rendered during the past critical years.

The Authority record with great regret that up to the 31st March, 1945, 67 members of the staff had been killed in air attacks on this country, 38 of these while on duty, and 49 had lost their lives while on service in H.M. Forces.

The Authority place on record their profound appreciation of the services of all grades of their staff throughout the years of war. The many and varied calls made upon them, in the work of the port and in the Civil Defence Services and Home Guard, often under dangerous and uncomfortable conditions, have been met cheerfully and ungrudgingly. They have honourably and nobly played their part in total war.

The great task that has been accomplished in the Port of London could not have been fulfilled without the close co-operation of all the interests within the port. Through the machinery of the Port Emergency Committee these varying interests—Shipowners, Wharfingers, Lightermen, Tug Owners, Ship Repairers, and the Service and Supply Departments—have worked together under most cordial relations and the Authority gratefully acknowledge the assistance which has been given so readily by everyone concerned.

General

At the 31st March, 1945, the percentage additions to basic rates and charges which had been amended during the year were as follows:—

	Percentage addition generally.
Import Goods (excepting rent charges) ...	61
Export Goods (do.) ...	23½
Discharging and other services for vessels in the Docks	33

During the year 477,608 cubic yards of material were dredged from the river and 1,141,043 cubic yards of mud from the docks. As a war-time measure, this material was deposited in the river at Mucking.

The Report is signed by the Rt. Hon. T. Wiles (Chairman) and F. W. Nunneley (Acting Secretary).

Port of London Staff Changes

Retirement of Three Dock Superintendents

Three Dock Superintendents, who between them are responsible for the discharge and loading of ships berthing at over 30 miles of dock quays, retired from the service of the Port of London Authority on December 31st last.

Mr. Alfred Kilby, M.B.E., Superintendent of the Surrey Commercial Docks, spent nearly 44 years in the service of the Port of London. During most of that period he has been at the Surrey Commercial Docks, commencing as a Delivery Clerk and becoming Superintendent of the Control in 1932. He has made a life-long study of timber, particularly softwoods, and he is one of the best known men in the London timber trade, by whom his advice is frequently sought. He was awarded the M.B.E. in recognition of his outstanding services during the war, the Surrey Commercial Docks having been a special target of the Luftwaffe in the early stages of the Battle of Britain.

Mr. A. H. Fussell, M.B.E., Superintendent of the India & Millwall Docks since 1941, commenced his career as a Junior Clerk; he became Superintendent of Tilbury Docks in 1939, previously having held appointments at the Royal Victoria Dock, Cutler Street Warehouse, London & St. Katharine Docks, and at the Port Authority's Head Office. His M.B.E. was also awarded in recognition of war service.

Mr. C. E. Shaw, Superintendent of the London & St. Katharine Docks since 1941, had previously served at the Royal Victoria and Albert Docks, the India & Millwall Docks, and for a period was a member of the Research Department, which advised the management on organisation and dock operating matters between the wars.

Notes of the Month

Death of Harbour Official

The death has taken place of Captain William Strahan, harbour master at Carrickfergus, Co. Antrim, Northern Ireland.

Cold Store at Oslo

The Port Authority of the Norwegian capital, Oslo, has assigned the lease of a site at Fillipstad, adjoining a banana-ripening store, to the Oslo Fryserianlegg A/S for the construction of a deep-freezing cold store for the reception of fish and other foodstuffs.

Increase in Harbour Rates

Both the Dundee Harbour Trust and the Clyde Navigation Trust have announced increases in their harbour rates, due to falling-off in revenue. In the case of Glasgow, the increase will mean that the rates in most cases are 25 per cent. higher than in 1939. At Dundee, the effect will be to restore the 50 per cent. above schedule, which was cut to 25 per cent. last March.

Proposed Fishing Port Development

The Northumbrian Urban District Council of Amble is anxious to develop the town as a fishing centre and has prepared a scheme estimated to cost £28,000. The scheme has been submitted to the Ministry of Agriculture and Fisheries, but has not received its approval on the ground that the proposed expenditure could not be justified by the present extent of the local fishing industry. The Council is pursuing the matter with the Ministry.

Progressive Port Policy at New Orleans

The Board of Harbour Commissioners at New Orleans, U.S.A., announce that they propose to embark on a " new and progressive policy." Private industries with their own shipside wharves will hereafter be permitted to handle limited amounts of " outside cargo " without paying wharfage and tollage charges to the Board, where such extra cargo is determined by the Board to be reasonably incidental or necessary to the operation of the indsutry. The Board also state that they view with favour the private development of the sites on both sides of the publicly owned and controlled Industrial Canal which traverses the harbour area.

Clyde Navigation Trust.

The Clyde Navigation Trust has now officially given general approval to the broad principles of the Clyde Estuary (Cooper) Report, and has agreed to communicate with the Ministry of War Transport on certain aspects of the position of Port Administration which have developed since the date of remit of the Estuary Committee.

Mr. James Young, M.B.E., has been recommended to the vacancy as Assistant Secretary, created by the retirement of Mr. James Logan. Mr. Young has been in the service of the Trust for 27 years, in the General Manager's and Secretary's Departments. The appointment dates as from 1st January.

Port of Leith Administration

The Leith Docks Commission has recently had under consideration the status and designation of its official staff. Following a report of a special committee set up to examine the whole matter, with particular reference to the legal aspects involved in so far as these affect the Commissioners' statutory obligations, the Commissioners unanimously decided that the present designations of their officials be altered to bring them into line with the larger ports of the country.

The principal appointments are as follows: Mr. T. A. S. Fortune, M.Inst.C.E., M.Inst.T., the present clerk and superintendent, has been appointed general manager and secretary. Mr. Fortune, in addition, retains his present appointment as chief engineer. Mr. J. R. Proudfoot, the present treasurer and collector, has been appointed treasurer and collector and assistant general manager. Mr. A. Balfour Kinnear, solicitor, the present law agent and deputy clerk, had been appointed law agent and assistant secretary.

Belfast Harbour Airport.

It is stated in the Press that the Admiralty are considering the advisability of establishing a permanent station for the Fleet Air Arm at the Belfast Harbour Airport where an aerodrome is already in existence and has been in use during the war.

Humber Conservancy Appointment

In succession to Captain Arthur Ernest Butterfield, M.Inst.C.E., who is retiring, Major Ralph John Hindmarsh, M.A., Assoc. M.Inst.C.E., has been appointed Engineer to the Humber Conservancy Board. Major Hindmarsh, who is 35 years of age, has held the position of Assistant Engineer to the Tyne Improvement Commission since 1937.

Proposed Development of Mallaig Harbour

Mallaig Fishery Harbour, Inverness-shire, was the subject of a plea for improved accommodation and increased quayage at a recent meeting of the Lochaber District Committee of the Inverness County Council. It was alleged that the lack of adequate berthing accommodation hampered the fishing industry and that craft had to lie at anchor in the bay, where they were exposed to considerably risk from northerly gales, while the lack of sufficient quay space caused the work of unloading the fish catches to be seriously held up. Councillor Isaac Wallace, who raised the matter, is to bring it before the County Council.

Retirement of Port Official.

At a recent meeting of the Preston Town Council, Mr. J. G. Merriweather, general superintendent of the Port of Preston Authority, tendered his resignation to take effect from 31st March next. After holding several positions at the Hartlepools from 1893 to 1915, Mr. Merriweather entered the service of the River Wear Commission, Sunderland, as Traffic Superintendent, which position he vacated in 1922 to take up his appointment at Preston. He is a member of the Dock and Harbour Authorities' Association and of the National Council for Port Labour Employers, and former member of the Council of the Institute of Transport. He is an ex-chairman of the Preston and District Chamber of Commerce. During the war he has acted as Executive Officer of the Port Emergency Committee.

War Damage at the Port of Liverpool

From a statement issued on January 14th, detailing the damage done to the Mersey Dock Estate by enemy action, it appears that 92 acres of shed space were totally destroyed and a further 90 acres suffered major and minor damage. This acreage represents roughly 8 per cent. of the total land area occupied by the dock estate at the Port of Liverpool.

As regards merchant shipping lying in or approaching port, 202 vessels were totally or partially destroyed during the war period. But the port never ceased to function; indeed, 120,000,000 tons of foreign-going vessels and 23,000,000 tons of coastwise shipping docked and undocked during the 68 months of the war, and over 70,000,000 tons of cargo was handled over the dock quays.

Deaths of Former Harbour Board Chairmen

The death has been announced of Mr. Robert Murton Sutton, a well-known shipowner on the North East Coast of England and former chairman of the Blyth Harbour Commission. He had been closely associated with Newcastle Quayside for over 50 years.

The death has also been announced of Sir Francis Samuelson, former chairman of the River Tees Conservancy Commission and a leading Tees-side industrialist. Sir Francis became a member of the Conservancy Commission in 1901 and was elected chairman in 1931, a post which he occupied till towards the end of 1942. He was High Sheriff of Yorkshire in 1917-18 and President of the Iron and Steel Institute from 1922 to 1924.

Warehouses and Transit Sheds at Ports

With Special Reference to Experience gained during 50 years in the Port of Copenhagen

By H. FUGL-MEYER, M. Danish I.C.E.
(Director of the Free Port of Copenhagen)

Aerial View of Free Port and Harbour

Origin of the Free Port of Copenhagen

ON November 9th, 1944, the Free Port of Copenhagen celebrated its fiftieth anniversary, and yet, in spite of the importance of the port, very little was done to celebrate the occasion. By means of an underground army, Denmark was fighting a death struggle against the strangling grip of the brutal German intruders. Unfortunately, the Free Port was to a great extent in the hand of the enemy, and many of its employees who were enrolled in the Resistance Movement had an extremely difficult time. In addition, one sabotage after another paralysed different parts of the port. It was a fight involving sweat, blood and tears.

The unconditional surrender of Germany and the liberation of Denmark by Allied troops came like a glorious dream; the Danes were wild with joy for recovered freedom and grateful to the Allies for their magnificent efforts.

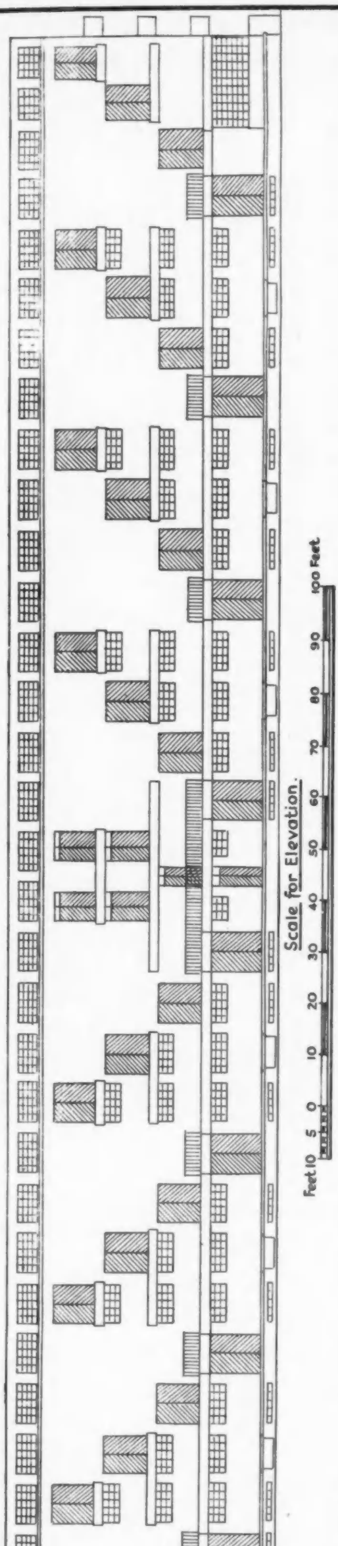
While the port is waiting for the revival of its ocean traffic and is busy winding up the German stores and assisting the Allied troops, there is time to take into consideration the lessons learnt through the experience of the 50 years which have elapsed since the inauguration of the Free Port in 1894—and to disclose the plans for its immediate future.

The construction of the Kiel-Canal, connecting the North Sea and the Baltic, was the immediate reason for the building of a Free Port in Copenhagen. Until the opening of the Canal, Copenhagen was undisputedly the " Key to the Baltic," but now that the Canal brought Hamburg in direct connection with the Baltic Sea, the bankers, merchants and shippers of Copenhagen united in creating a Free Port in order to preserve the position of their city. All was done in order to make the port as modern and efficient as possible.

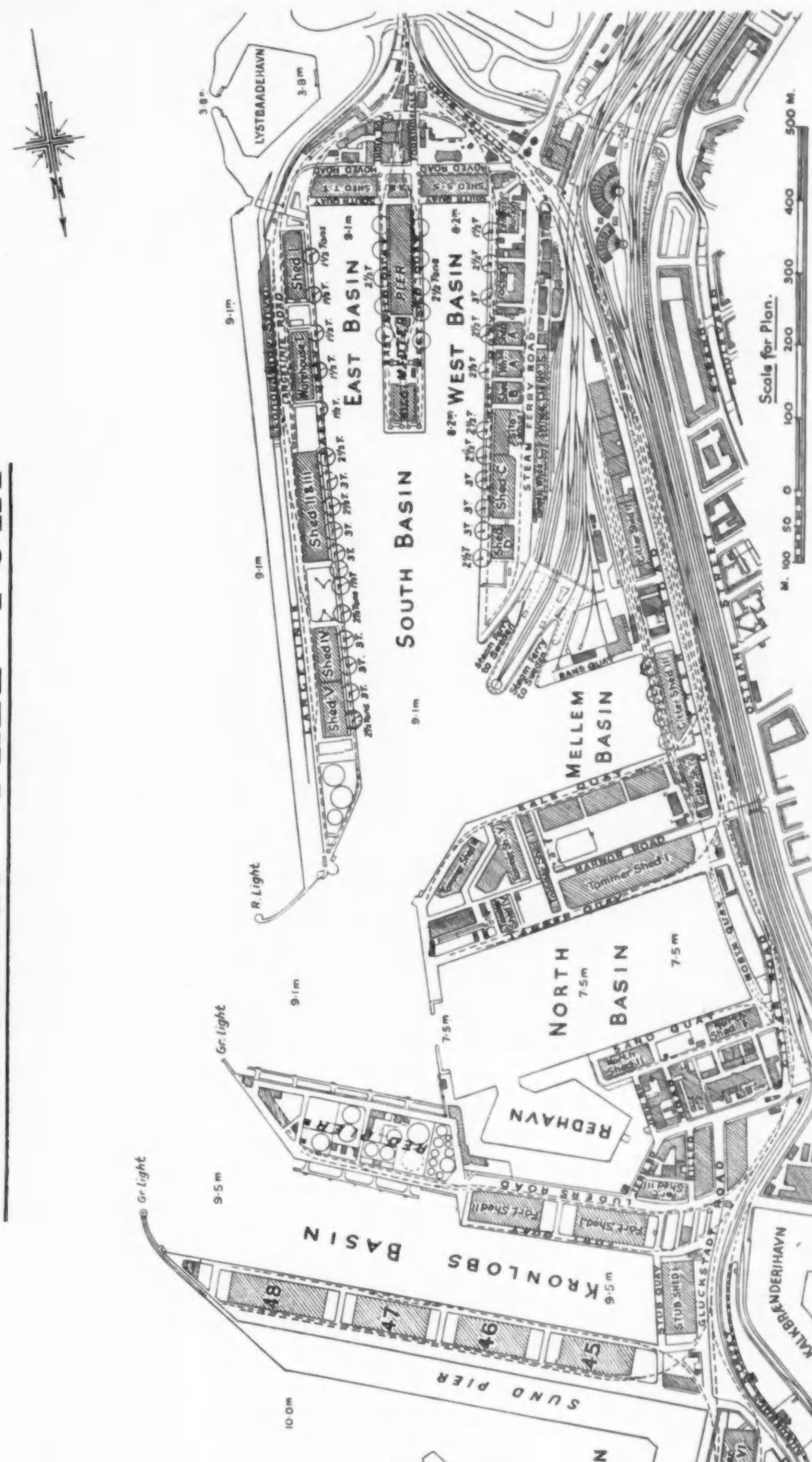
The first electric cranes had been built only a few years previously, and many conservatives had their doubts as to the efficacy of electricity. Notwithstanding this, the port was electrified so that lifts, cranes and granary machines were driven by electric current supplied by the port's own power station. The affairs of the port were handed over to a government—a controlled private company.

During the past fifty years this Company, the Copenhagen Free Port Co., Ltd., has always striven to be in the front-line of development. On account of its commercial structure, the Free Port has never become " over-mechanised," as is the case with so many other ports receiving subsidies from city or state organisations. Nevertheless, all outfit has readily been acquired when considered necessary for the operation of the port traffic.

QUAYSIDE ELEVATION OF PROPOSED SHED



COPENHAGEN FREE PORT



Warehouses and Transit Sheds at Ports—continued

Graph 1 shows the growth of the power station and the maximum momentary output. *Graph 2* indicates the increasing number of cranes, and *Graph 3* shows the growing capacity of the sheds and warehouses, which now include cold-storage and fruit sheds, besides special accommodation for inflammables.

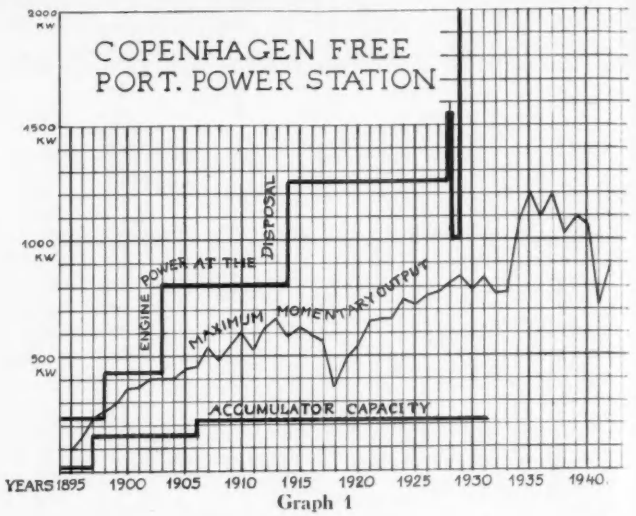
Development of Shed and Warehouse Types

The Free Port of Copenhagen has played a most important part with regard to warehouse types. On *Plan 1* a number of sections through different types of quay buildings in the Free Port show the development from 1894 until to-day. *Figures 1, 2 and 3* indicate the good technical start in 1894. The platforms in first floor level, facing the waterfront and running along the buildings (*Figs. 1 and 2*), were highly praised by engineers of those days. For many reasons, however, they were not altogether practical, but they formed the first stepping-stone towards the creation of a modern, efficient, many-decked quay-shed. *Figs. 4 and 5* show ordinary warehouse and shed types. *Fig. 7* is a combined warehouse for sundry goods and grain, which is actually not specially adapted to either purpose, but on *Fig. 8* the next step forward is seen. The first attempt in forming a staircase-shaped balcony system can be seen on the left side of *Fig. 8*. In *Fig. 9* the fully developed stair-shaped shed is seen. Every storey can be reached by the quay crane without hindrance, making each storey as useful as the ground floor. The basement is reached through trap-doors in the platform outside the ground floor. This type of quay shed has been copied all over the world.

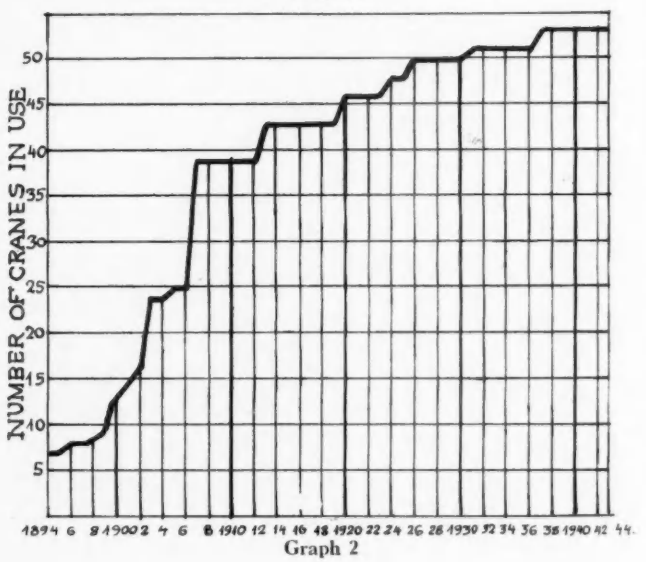
Level Luffing Cranes at the East Pier

In order to illustrate the development of this special type of transit shed on a broader field, *Plan II* is shown. On this plan twelve stair-shaped quay sheds from different parts of the world outside the Free Port are shown; they are arranged according to the year in which they were taken into use.

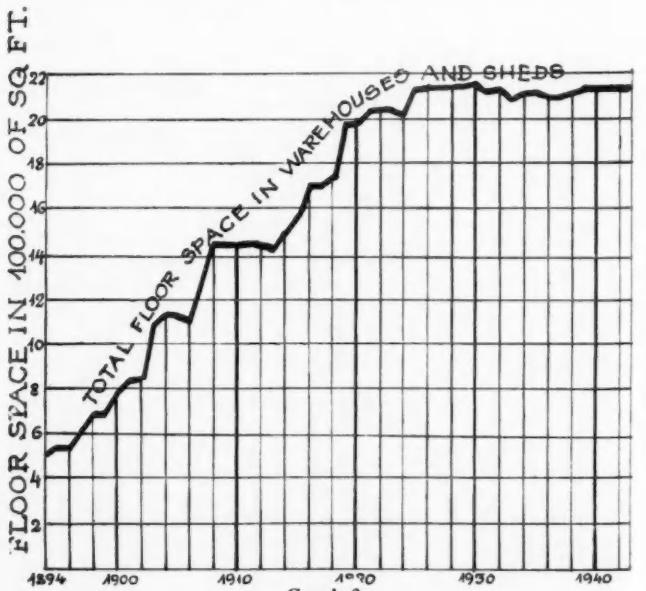
Fig. 1 shows a section through the sheds in Manchester. A comparison between this figure and Fig. 8 on Plan 1 makes it evident that the Free Port shed has been influenced by the one in



Graph 1

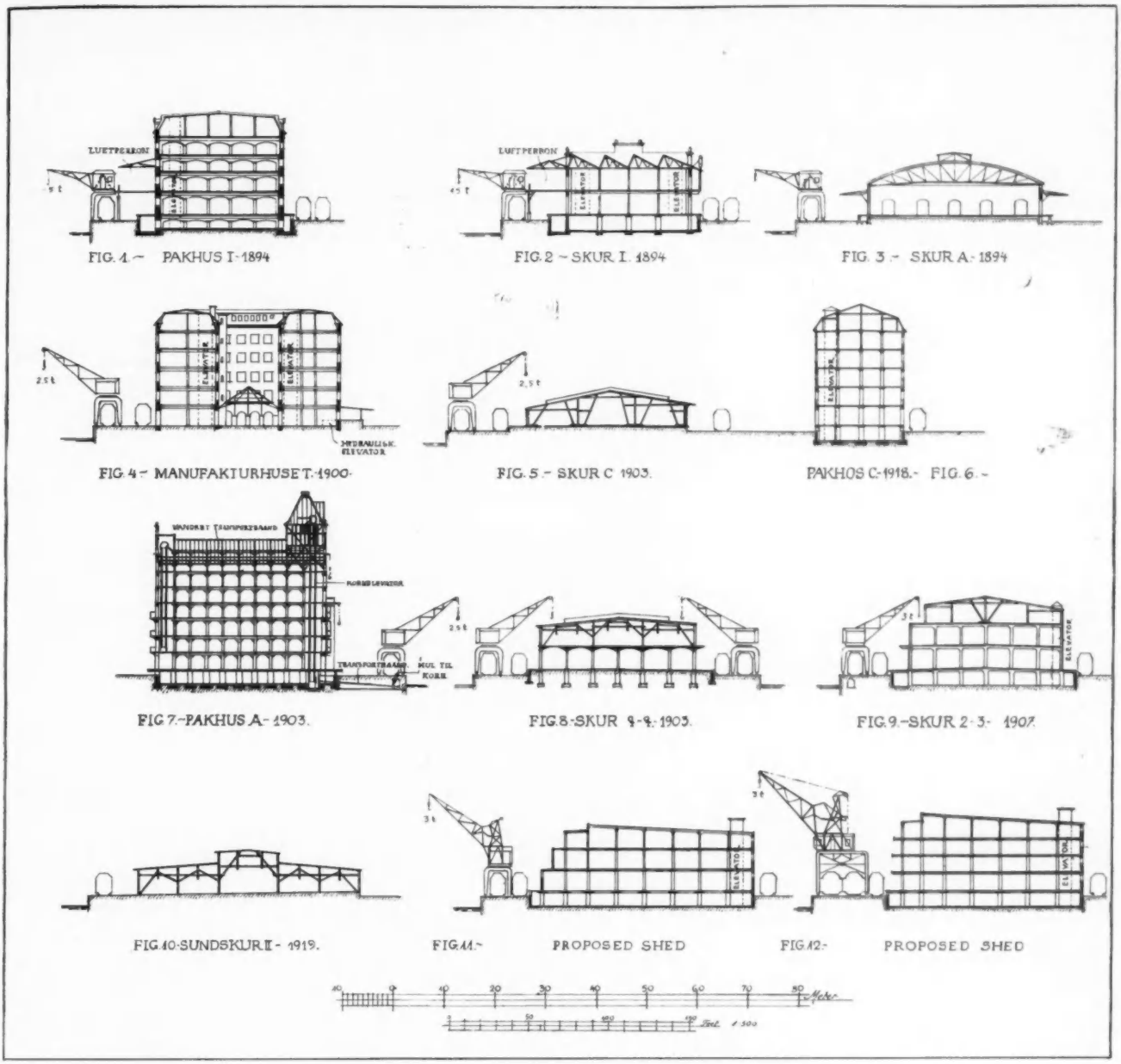


Graph 2



Graph 3

Warehouses and Transit Sheds at Ports—continued



Plan I.

Manchester, but nevertheless the Free Port of Copenhagen was the first place where this shed system was developed to perfection. It is a fact that the type used in Copenhagen has had direct influence on many ports in the world, chiefly, of course, on Scandinavian ports.

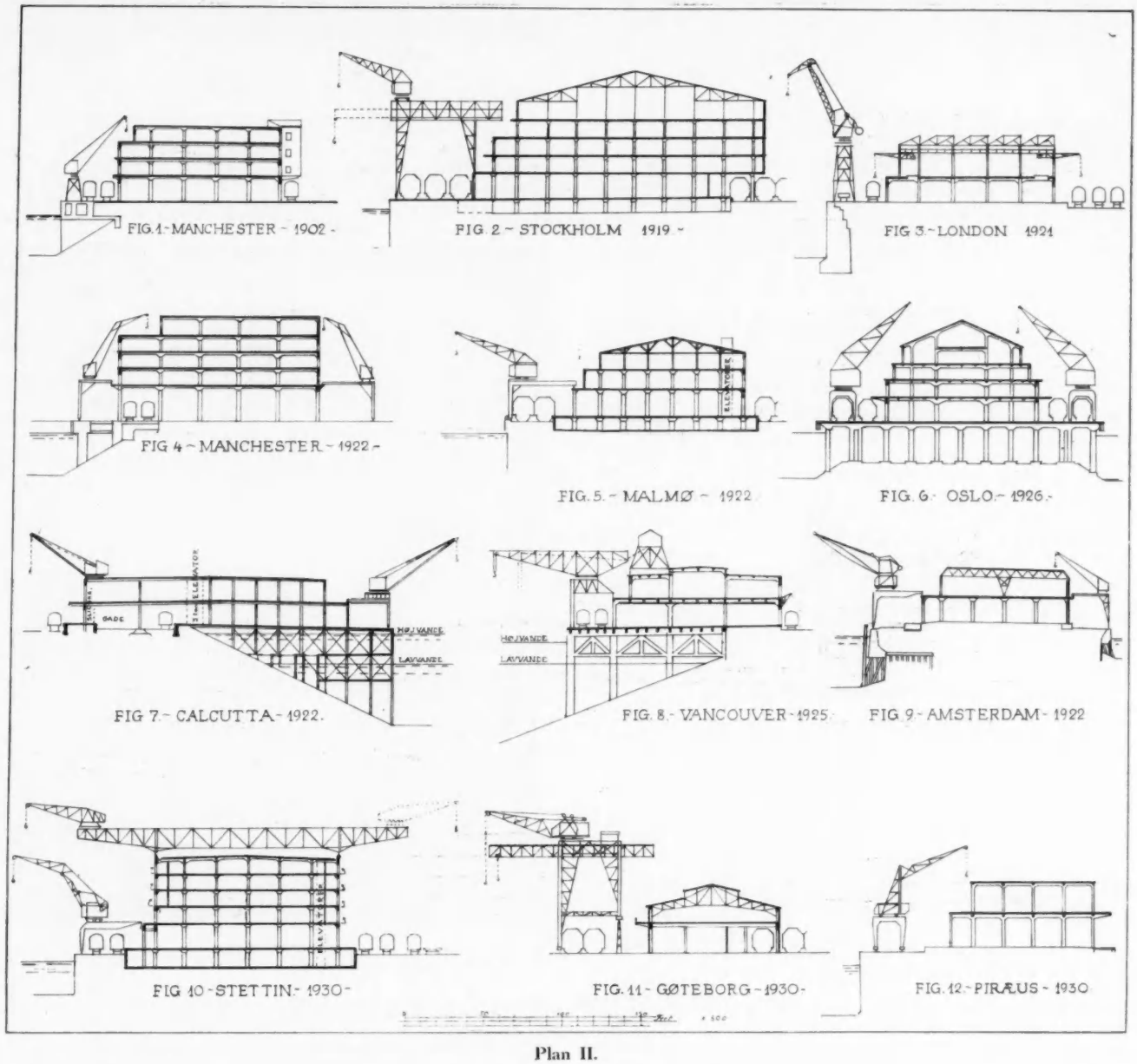
The working capacity of any quay is closely connected with the crane outfit and the buildings erected along the quay. If the sheds or warehouses lining the waterfront are clogged up with goods, the particular stretch of waterfront will be out of action until the goods are removed. Even the best cranes will only add to the congestion on the wharf if the buildings ashore are insufficient.

It is therefore important to find a method whereby one may figure the required size of the buildings bordering the wharves.

For a number of years many engineers considered the arrangement indicated on *Plan I, Figs. 5 and 6*, to be ideal. The goods were discharged into a transit shed in which it was only allowed to remain until the arrival of the next ship. Within three days after the discharge of the ship's cargo, the goods had to be taken home by the owners; the remainder, which was left after the elapse of the three days' term, was removed by the local Port Authority to the warehouses behind the sheds.

A rule like this ensured an uninterrupted utilisation of the quays and cranes, and made it fairly easy to figure the size of the sheds. If a port in which such a rule is enforced is an ocean terminus where fully-laden ships may arrive in order to discharge all their goods, an idea of the size of the sheds can be had by presuming that the goods will be stacked in the shed 6-ft. in height and that it is necessary to leave 10 per cent. open space for passages between the goods. Each sq. ft. of the floor will be able to accommodate 0.085 tons of goods. Supposing the arriving ship to be 1,000 net. reg. tons, the length 195-ft., and the cargo weighing 1,500 tons, the shed space required for stacking would be 99 sq. ft. per linear ft. of quay. That would mean to say that

Warehouses and Transit Sheds at Ports—continued



Plan II.

the shed should be 99-ft. wide. If the arriving ship is very large, e.g., 10,000 net. reg. tons, length 690-ft., cargo tonnage 13,000 tons, the storage space figured for each linear ft. under the same assumption would be 245 sq. ft. In such a case, the discharging process covers a period of such length that about half of the cargo is removed before the last goods appear, making a shed about 130-ft. wide suitable for the purpose.

This appears to be a practical width within which the labourers move the goods without extra charges in most ports, also in Copenhagen. If this distance is exceeded, extra handling money will be demanded.

The above-mentioned rule ensuring empty transit sheds and reserve warehouse space on less important areas behind the wharf may be the only solution in ports where the sub-soil in the waterfront is unable to support many decked sheds, but wherever it is feasible to make the quay sheds sufficiently spacious to contain the goods until it is convenient for the owners to take delivery of it, this ought to be done in order to save an additional movement of the goods. Such a movement is unnecessary, expensive, and damages the goods.

It is a matter to be considered separately for each individual port, if it is possible to save this additional goods movement. The cheap and safe storage problem is very important for a Free Port, in which consignment goods is stored, and for transit goods and goods for which the owner saves the outlay of customs dues until he brings it into the market, it is equally important to find the correct size of the buildings at the quay.

(To be continued)

Honours for Port Officials.

In the New Year Honours List appear the names of Mr. John William Sutton, Engineer to the Dover Harbour Board, who receives the O.B.E. and of Mr. Robert Dixon, Assistant to the Chief Docks Manager, Great Western Railway, who becomes M.B.E.

Port of London Authority

Resignation of Chairman and Vice-Chairman and Fresh Appointments

At a special meeting of the Port of London Authority on January 3rd the resignation of their Chairman, **The Rt. Hon. Thomas Wiles, P.C.,** was accepted with great regret. Mr. Wiles undertook the Chairmanship of the Port Authority in April, 1941, for the duration of the war, and the Authority have placed on record their high appreciation of his valuable services during a period when the port endured the greatest ordeals and strains in its long history, and their thanks for the ability and unfailing courtesy with which Mr. Wiles fulfilled his onerous duties.

The Port Authority also accepted with much regret the resignation of **Mr. L. H. Bolton,** their Vice-Chairman since 1941, owing to post-war pressure of shipping and other business commitments upon his time. He continues to be a member of the Port Authority. Mr. Bolton rendered invaluable services to the Port of London during a time of great difficulty and the Authority have recorded their high appreciation of the able and courteous manner in which he assisted the conduct of affairs and his constant attention to the many and varied problems that had to be solved.

The Port Authority further recorded a high tribute to **Sir Douglas Ritchie, M.C.,** their General Manager since 1938, upon his retirement from that office.

Election of New Chairman and Vice-Chairman

The Port Authority then unanimously elected **The Rt. Hon. Sir John Anderson, P.C., G.C.B., G.C.S.I., G.C.I.E., M.P.,** Chancellor of the Exchequer in the Coalition Government, to be their new Chairman. His biography will be found on page 248.

The Port Authority also unanimously elected **Sir Douglas Ritchie, M.C.,** to be their new Vice-Chairman.

Sir John Anderson is the fourth Chairman of the Port of London Authority. Previous Chairmen of the Authority were:—

Lord Devonport	...	...	1909-1925.
Lord Ritchie of Dundee	...	...	1925-1941.
Rt. Hon. Thomas Wiles, P.C.		...	1941-1946.

The Rt. Hon. Thomas Wiles, P.C.

Mr. Wiles has served on the Board of the Port Authority since 1923, when he was elected as one of the members representing "Goods." He was Chairman of the Authority's Law and Parliamentary Committee from 1925 to 1934 and of the Finance Committee from 1936 to 1940. He was elected Vice-Chairman in 1934 and Chairman in May, 1941.

In 1899 Mr. Wiles represented South-West Bethnal Green on the London County Council, and was M.P. (Liberal) for South Islington, 1906-1918. He was Parliamentary Secretary to the Rt. Hon. T. McKinnon Wood (Financial Secretary to the Treasury, and afterwards Secretary for Scotland). In 1916 he was sworn a member of His Majesty's Privy Council. He is J.P. for Oxfordshire and Chairman of the Royal Surgical Aid Society.

Mr. Wiles has many commercial interests in the City of London. He is senior partner in the firm of Joseph Wiles & Son, Ltd., grain merchants; Vice-Chairman of the Corn Exchange; Chairman of the Anglo-Portuguese Colonial and Overseas Bank, Ltd.; and a member of the Baltic Exchange. He was President of the London Corn Trade Association, 1919 and 1920, and President of the National Federation of Grain Trade Associations, 1922-1923. He accepted the Chairmanship of the Port Authority for the duration of the war on the retirement of Lord Ritchie of Dundee in 1941.

Mr. L. H. Bolton

Mr. Bolton first served as a member of the Port Authority from 1927 to 1928 as one of the representatives of "Vessels." He again joined the Board in 1931 and has been re-elected at each subsequent triennial reconstitution of the Authority. He was Chairman of the Staff Committee, 1935-1941, and was elected Vice-Chairman in 1941.

Mr. Bolton has been a member of the London Port Emergency Committee since its inception on the outbreak of war and was Deputy Ministry of Shipping Representative for the London Area during the war period.

Well-known in London shipping circles, Mr. Bolton is Governing Director of Bolton Steam Shipping Co., Ltd., F. Bolton & Co., and P. B. Ingham, Ltd., and Director of Glover Bros. (London), Ltd. He is an Underwriter Member of Lloyd's, a Member of the Committee of Lloyd's Register of Shipping since 1927, and is also on the Committee of the London General Shipowners' Society. Mr. Bolton is a Member of the Dover Harbour Board.

Sir Douglas Ritchie, M.C.

Sir Douglas Ritchie, M.C., has been with the Port Authority since 1923, and before taking over the General Managership held the post of Solicitor, and later the dual office of Solicitor and Secretary.

Since the beginning of the war, Sir Douglas has exercised wide additional powers as Chief Executive of the London Port Emergency Committee, by which successful co-operation between the various services and interests in the port has been achieved.

Sir Douglas played an important part in the evolution of the port labour employment scheme which came into operation in March, 1942, under the auspices of the National Dock Labour Corporation, Ltd. He has been a Director of the Corporation and Chairman of the London Board of the Corporation since their inception.

Born in 1885 near Manchester, of Scottish parentage, Sir Douglas was educated at Manchester Grammar School and Manchester University. He was articled to the firm of Alfred Grundy, Son & Co., solicitors, of that city. In 1908 he was appointed as a legal assistant with the Manchester Corporation, and about four years later became assistant solicitor to the Stoke-on-Trent Corporation. In 1913 he was selected for the position of Deputy Town Clerk of Burnley, which position he retained until January, 1920, when he became Town Clerk of that Borough.

During the war of 1914-18, Sir Douglas saw active service, with the rank of Captain, in France with the 4th Gordon Highlanders and the Tank Corps, and was awarded the Military Cross. He holds the rank of Lt.-Colonel in the Engineer and Railway Staff Corps, R.E. (T.A.).

His experience and abilities are widely sought and respected in port operational and administrative circles, particularly in the Dock and Harbour Authorities Association. He is honorary treasurer of the Executive Committee of the National Council of Port Labour Employers, and a member of the Honorary Committee of Management of the Incorporated Thames Nautical Training College and Treasurer of the Poplar Hospital for Accidents. His favourite recreations are hunting and golf, and he takes a keen interest in the sporting and recreative activities of the staff of the Port of London Authority.

New General Manager

In succession to Sir Douglas Ritchie, the Port Authority have announced the appointment of **Major Theophilus Williams** as their General Manager. Major Williams, who has been Dock and Traffic Manager for twelve years (since 1933), has already taken over his new duties.

Born at Dowlais, Glamorganshire, Mr. Williams was educated at King's School, Chester, and Peterhouse, Cambridge, where he obtained his M.A. For a number of years after leaving the University he was a member of the Board of Education inspection staff. He served in France during the war of 1914-18, first with the 2nd Welsh Regiment and later in the Supplies and Transport Services, being appointed Assistant Military Landing Officer (Supplies, etc.), Calais, and then Deputy Assistant Director of Docks. After the war he was for four and a half years Manager of the London Bunkering Dept. of Harrisons (London), Ltd.

Mr. Williams was appointed Outdoor Assistant to the General Manager of the Port of London Authority in 1928, and in 1930 he became Assistant to the General Manager.

Clyde Port Amalgamation

Conclusion of Clyde Estuary Committee's Report*

Having dealt with the formation and constitution of a new Port Authority for the Clyde area, Clyde Estuary Committee proceeded in their Report to deal with proposals for the

Improvement of Facilities

Upon the assumption that changes in the port administration are to be carried into effect more or less on the lines of the recommendations outlined above, we repeat that the responsibility for formulating and carrying out, with such adaptations as changing circumstances may dictate, a master plan for the Clyde should rest with the new authority, and that it would be unfair to require them to enter upon their duties with their hands tied. But in executing our remit, we have had brought to our attention from various quarters a number of criticisms of the facilities at present provided at the Clyde ports, and, as these are matters to which immediate and careful consideration will in any event have to be given, we now proceed to summarise the more important points. We should desire, however, that our suggestions and recommendations in regard to these matters should be regarded as provisional and subject to review by the authority or authorities on whom the duty of administering the Clyde will ultimately rest.

There is a general and emphatic demand for additional dry dock facilities on a scale sufficient to accommodate the largest type of vessel built at several of the Clyde yards. With one exception, the only dry docks which at present exist are situated in the upper reaches of the river, and the largest is insufficiently large, and allows too small a depth of water at the sill, to accommodate the larger classes of ships, naval or mercantile. It is anomalous that such vessels should be built on the Clyde, but should never be able to return to the Clyde for the periodical repairs and refits for the execution of which there are in other respects available such ample facilities and special skill.

Associated with the provision of a dry dock of the necessary dimensions, the appeal is made for suitably disposed and suitably equipped Fitting-out and Repair Berths; and for one or more Floating Cranes of large outreach and lifting capacity to be employed on ship repair work and to supplement the cranage facilities at shipbuilding berths and fitting-out basins.

For certain of these needs temporary provision was made during the war by the loan of plant from other ports and by plant constructed by the Government during the war. We feel, however, that in so important a centre of the shipbuilding and engineering industries permanent provision of the best modern facilities ought, if possible, to be made. If such provision is to be made for the accommodation of ships of the largest type, the site would probably have to be in close proximity to open water so as to obviate the difficulties of handling such vessels in a narrow channel.

Provision of such facilities in proximity to the extensive landlocked anchorages of the upper estuary obviously raises the question of the suitability of this area as a site for a naval base. We are not in a position to express any view upon the strategic and naval considerations bearing upon this matter, nor have we sought to explore them; but we have no doubt that the Admiralty is aware of the great possibilities of such a scheme and the many advantages to the Fleet and to the Clyde which it would yield. It appears clear that great economies could be effected, and notable indirect advantages secured, if a dual demand could be met by the single provision of a graving dock and associated works, available, when not required by the Admiralty, for use for mercantile work.

We have also had brought to our notice another project of the highest importance, viz., the handling of the ore imports on which the iron and steel industries, and indirectly the shipbuilding and engineering industries, are dependent. This issue raises questions of the location and organisation of industry extending far beyond the ambit of our remit or the powers of any port authority, but its importance to the future of the Clyde and of industrial Scotland needs no emphasis. It is unfortunately undeniable that, by comparison with the modern layout of integrated plants as found in America and elsewhere, the location and general design of the Scottish Iron and Steel industries are far from ideal and involve unremunerative costs. Under existing conditions the imported ore has to be discharged at Rothesay Dock and elsewhere by methods which leave much to be desired on the score of efficiency and expedition, thence transported by rail to the iron and steel works, most of which are situated on the far side of the congested industrial areas of Glasgow; and the finished product, if required for shipbuilding, has then to be transported back to the Clyde to be employed as the raw materials of shipbuilding at points not far from the quays at which the ore was discharged. About 15 years ago a joint investigation led to the formulation of an ambitious, but obviously meritorious, project for the creation on the lower part of the river of a complete industrial unit, with deep-water wharves for large ore ships, facilities for discharging their cargoes direct into blast furnaces and thence into steel works and rolling mills, the products of which, finished or semi-finished, would then be available for short transport by barge to the shipbuilding yards, or for longer transport by rail or road to more distant destinations. This scheme, which would have entailed the co-operation of many interests and very heavy capital outlay, never materialised. We venture to hazard the prediction that eventually something on these lines will be inevitable though we recognise that a factor of great importance is the transport of coal. In the meantime a modified project has been worked out by the steel trade, the railway companies and the Clyde Trust for the creation at General Terminus of new and up-to-date facilities for the rapid handling of ore cargoes, and but for the war, this project would doubtless have been carried into execution before now. Its urgency and importance for Clydeside require no comment.

Our attention has been drawn by many interests to the demand for storage accommodation immediately accessible to ship. We have already indicated the disadvantages of situation which prevent the Clyde ports from enjoying a large share of entrepot trade, and there is no case for the provision of the type or scale of facilities appropriate to extensive re-export traffic. Nevertheless it is plain from what we have heard that the question of providing additional and more convenient storage at the Port of Glasgow deserves urgent consideration.

We also heard much of the neglect of inland water transport by barge. As things are, the virtual non-existence of works with convenient water frontages greatly limits the possibilities of barge transport. But the river and upper estuary offer excellent opportunities for industries requiring deep-water accommodation for the cheap and rapid reception and shipment of large volumes of raw materials and finished products; and if such development takes place, there will be no difficulty in developing barging services to meet the needs of manufacturers and traders.

In addition to the naval base project, which stands in a class apart, we have also had pressed upon our attention from more than one quarter schemes for the creation in the Clyde Estuary of two entirely new ocean terminals, one at Greenock and another on the Ayrshire coast. The ambitious nature of these projects sufficiently appears from the public comparisons which have been suggested to Southampton and even to Liverpool.

We have not attempted exhaustively to examine these projects for they have not been worked out in detail; but it is plain that the bare fact that they have been advanced has occasioned apprehensions amongst those who rightly insist that the Clyde ports must be economically self-supporting and must keep dues and rates at the lowest possible level. To allay these apprehensions we venture to add certain comments.

The creation of new deep-water commercial ports of national status is not only a matter of the construction of wharves, breakwaters and other works and equipment (though these alone would entail on the scale contemplated very heavy expenditure of money, labour and material), but also requires the provision of extensive housing and urban facilities, warehousing and commercial centres, road and rail communications, and the industrial planning of the adjoining region. From the point of view of the relative priorities of the demands likely to be made in the early post-war years upon the available capital, labour and material of the United Kingdom, it appears to us unlikely that the country could afford the facilities for the creation of new seaports in the near future unless the projects were well vouched as economically

* From p. 211, January issue.

Clyde Port Amalgamation—continued

sound and nationally essential. We have already indicated our reasons for thinking that for some time to come the country as a whole will not need much additional port accommodation; and it is clear to us that, if all the Clyde schemes of new construction were carried into execution, the estuary would be enormously over-provided with port facilities. Their full utilisation could only be attained, if at all, by the diversion of traffic from other United Kingdom ports enforced by the Government against the desires of shipowners and merchants; and the capital and maintenance charges might be a crippling burden on the users of the Clyde.

Whatever prospects the more distant future may hold, it appears to us that the new Clyde authority will find full scope for its activities for some time to come in modernising and improving existing facilities, in scrapping obsolescent facilities, and in undertaking such specialised new construction as may be required to meet industrial developments in the hinterland and to keep abreast and ahead of the requirements of shipowners and trading interests in every part of the area committed to their charge. It is along these lines that in the early years success will be assured, rather than by the premature provision of large-scale port developments of a type appropriate only to the highly artificial conditions which prevailed on the Clyde during the last five years.

It is also in our view of critical importance to bear in mind that it is in the Port of Glasgow that by far the largest and mostly costly dock facilities already exist, and that these are situated in the focus of a great commercial and industrial area, close access to which as a market is, and is likely to remain, a powerful inducement to shipowners, traders and shippers. The facilities already available, with sundry improvements and modernisation, are capable, if efficiently operated, of handling a very large volume of traffic—so large that the fear was expressed that the problem might be to keep these facilities employed. While exact standards of comparison between one port and another are not practicable, we heard no complaints from shipping interests to the effect that Glasgow was relatively either expensive or inconvenient, the impression conveyed to our minds being that, everything considered, it compared favourably enough with similar ports in other parts of the world except in one respect to which we shall revert. Further we could find no support from maritime interests for the view, so often emphasised in other quarters, that the approach by the long narrow channel was a serious drawback. Incidentally, the maintenance and improvement of the channel are indispensable to the existence of the shipbuilding and other heavy industries which have come to be centred around the river.

In these circumstances we take the view that the advocates of large-scale new port construction on the Clyde must accept the onus of showing that the trade which they propose to accommodate will not be trade diverted from useful facilities which already exist, and that the heavy capital expenditure they propose will not at best result in the creation of prosperity at one point only at the expense of equivalent or more widespread depression at another. We do not think that they can discharge this onus.

At the present juncture in our national history we feel that the port should be regarded primarily as the creature, and not the creator, of the hinterland which it serves, and that nothing may be gained, but on balance much may be lost, by the provision of new facilities in excess of the industrial and commercial expansion reasonably to be anticipated in that hinterland. This seems to us to be specially true of the Clyde.

In thus stressing the continued importance and value of the up-river facilities we are not to be understood as encouraging complacency in past achievements. The one outstanding criticism of the Clyde was directed against delays in the handling of goods—due in part to inadequate or unsatisfactory equipment, in part to the congested conditions of road and rail transport in and about the docks, and deficient cross-river communications, in part to the limited hours normally worked by dock labour, and in part to customs and practices of the port which tend to retard the free flow of traffic. Some of these factors are, while others are not, within the control of a dock authority. From the comparisons furnished with pre-war continental ports, there is no doubt that their cumulative effect is very serious, and that great economies would be capable of achievement if all the agencies concerned co-operated in meeting the criticisms. Credit is due to the Clyde Trust and to certain shipping and stevedoring companies for the increased mechanisation achieved during the war by the provision of quay cranes, mobile cranes, mechanical trucks, etc. By the continuance and intensification of this policy the turn-round of vessels and the despatch of cargoes can be further expedited, and greater use thus made of the existing quayage.

We desire to lay special emphasis upon the widespread complaints against the inconvenience and inadequacy of road communications, especially for cross-river traffic, and upon the importance of this single factor for the attractiveness and efficiency of the Clyde ports. Central and local road authorities have so far done little to indicate that they realise how great are the direct and indirect benefits to be attained from the provision of a first-class system of roads for the service of the dock areas, with sufficient free and efficient vehicular ferries and adequate radial facilities from centre to circumference on both sides of the river. For the further developments to be expected in the Shieldhall area and in the lower reaches such improvements will be indispensable. We are glad to be able to state that this matter is engaging the attention of the Clyde Valley Regional Planning Committee who share our view that the matter is of the first importance.

As regards the lower reaches of the river and estuary the framing of a master plan for long-term development is necessarily dependent at the moment upon the outcome of the proposals now under consideration for the establishment of a naval base. If, as we hope, this project is adopted, it will necessarily form the focus of development not only in the estuary but in the adjoining industrial centres, and it will go far towards solving many problems in planning the future of the lower harbours and their hinterland.

Summary of Main Recommendations

We conclude by summarising the conclusions we have arrived at in answer to the second branch of our remit. They are:—

(1) That it is no longer compatible with the most efficient operation, or the best expansion and development, of the ports and navigational facilities on the Clyde that they should continue to be administered as in the past as separate and unrelated undertakings:

(2) That the time is now ripe for bringing the river and estuary as far down as the Cumbraes under the full control of a single unified authority, consisting of 21 members chosen as indicated, and that this authority should also enjoy certain limited powers in the lower estuary:

(3) That the unification should be effected by public legislation providing on the lines proposed (a) for vesting the constituent undertakings in the new authority; (b) for the determination by an arbitration tribunal of the amounts of the transfer considerations, if any, and for the issue by the new authority to the expropriated interests of stock in satisfaction of the transfer considerations; and (c) for conferring on the new authority certain powers in relation to undertakings not comprised in the initial transfer and to present or projected undertakings in the lower estuary.

In parting with this investigation, in the course of which we learned much of the work of the Clyde under war conditions, we cannot conclude without paying our tribute of admiration for the outstanding services rendered to the national interest and the cause of the United Nations by the Clyde Port Authorities, Port organisations, and workers throughout the critical years when the Clyde and the Mersey were the main arteries for the supply of Great Britain with foodstuffs and raw materials, and the shipment of munitions to the forces overseas. For a long period the Clyde ports worked intensively under adverse conditions day and night, and displayed a resiliency and a reserve of power and endurance for which the nation should be permanently grateful, and which augurs well for the prospects of the river and its ports in the years to come.

We desire to record our indebtedness to the Regional Port Director for Scotland and his staff for their assistance at every stage of our investigation, to the Clyde Navigation Trustees for so courteously facilitating our river inspections, and to our Secretary, Mr. McLarty, for his unfailing efficiency and industry.

We have the honour to be,

Your obedient Servants,

T. M. COOPER; ROBERT LETCH; ROBERT TAYLOR.

July, 1945.

Correspondence

To the Editor of "The Dock and Harbour Authority."

Impact Stresses

Dear Sir,—

I have read with interest the excellent contribution of Mr. Garde-Hansen on "Impact Stresses in Jetties, Wharves and Similar Structures." He deals with the subject in an able and useful way. The application of the continuous beam analogy is ingenious and sustained. However, there is a point I should like to make clear. In his reference to my paper, he says I give 0.2 as the maximum value of a vessel's K.E. which is transmitted to a jetty on collision. This is not a correct quotation or inference. My statement (*Structural Engineer*, August, 1943) is, "On the average of a number of tests, it was found that only 0.18 to 0.27 of the kinetic energy of the vessel is imparted to the jetty in head-on impact." In the example which followed, I gave 0.27 as the absorption factor. So far I have no reason to modify that estimate, but as the subject is most important, I have the following submission to make. Would it be possible to print the subjoined questionnaire, with a request to our harbour engineers to complete the particulars asked for?

Such data, if forwarded to me, would give me great pleasure to tabulate and analyse, and, if possible, use to fix a definite value for the absorption co-efficient: C 4, in Mr. Hansen's article.

The velocity of approach should be taken over the last ten feet travel towards jetty before impact.

Yours faithfully,

13, Mendip Gardens, Bath. R. R. MINIKIN.
December 17th, 1945.

QUESTIONNAIRE.

Type of jetty: Piled, cylinders; timber, R.C.
Type of fendering.
Displacement of vessel.
Velocity of direct approach.
Did vessel sheer off after impact or swing-to broadside?
If vessel rebounded after impact —how much?
Approx. angle of approach.
Remarks.

To the Editor of "The Dock and Harbour Authority."

Trinity High Water

Dear Sir,—

I trust you will give me the opportunity of replying to Captain Shankland's letter in your November issue.

Captain Shankland avoids giving a technical opinion on the points in question and seeks to shelter himself behind a good many irrelevancies and inaccurate statements. These things do not assist a technical discussion and he has not provided, and is unable to provide, any justification for what I called in my first letter, his new, erroneous and unauthorised Trinity High Water. His attitude appears to be that these subjects are rather academic and barely worthy of his discussion, but to me it seems not academic but a most practical matter when an error of 3 or 4-in. is found in the main datum level, upon which the tidal and other questions relating to the River Thames, are based. I will not attempt to answer every word of Captain Shankland's letter but will confine myself to the more serious points.

1. That T.H.W., as now used, was of fortuitous origin, is a reasonable and logical deduction from the historical facts, which remain undisputed. Telford, Rennie & Brunel lived and died before Ordnance Datum existed and naturally they used T.H.W. in its then embryo stage. They were no more involved in its fortuitous development than present-day engineers are involved in what Captain Shankland has now done to the same datum.

The suggestion behind all these personal references is that Trinity High Water sprang into being, like Minerva fully armed, under the ægis of the Trinity Corporation, that it was specifically created under parliamentary powers (in 1800), that it was designed with great precision and that its use is obligatory.

These ideas have been prevalent for generations but are without foundation. It has proved a useful datum, but when circumstances arise that suggest modification of it, these prejudices should not be allowed to prevent at least an examination of the subject.

2. The statement that Palmer & Humphreys "recommended" T.H.W. for the measurement of floods, is quite unjustified. In their report on the disastrous flood of 1928 they recorded a few heights above T.H.W. for the very cogent reason that old records had done the same, but it is a fantastic reading of this report to say that it was a "recommendation" of the use of T.H.W. A few years later an equally eminent engineer, Sir T. Pierson Frank, abandoned T.H.W. in this connection and referred all the statutory requirements of the L.C.C., as to flood walls, only to Ordnance Datum (Newlyn). He did not adopt Captain Shankland's slogan that "what was good enough for Palmer & Humphreys was good enough for me."

The simple fact, which has been exaggerated into a "recommendation," is that when the tide reaches a predetermined height above the painted T.H.W. Mark on the gauge at Southend, the flood warning for London is put into operation, a fact which alone should have prevented any responsible person from this arbitrary alteration in the theoretical height of T.H.W.

3. Captain Shankland blandly "disabuses me of my assumption" that he had set up a new value for T.H.W. It is by no means an assumption and I will show in a later paragraph that it is an inescapable fact.

4. Since 1848, when the Director of the Ordnance Survey determined the height 12.53-ft. above Ordnance Datum (Liverpool) this figure has been recognised as the official definition of T.H.W., to the exclusion of all older definitions. A very large amount of engineering work, bridges, tunnels, docks, wharves and dredging, over or under or near the River, has been authorised by Acts of Parliament and regulations, during this long period of nearly 100 years, so that the figure 12.53-ft. being referred to in these Parliamentary Plans, has acquired a certain authority that may be termed statutory. But not, be it noted, from Trinity Corporation.

No responsible body connected with the River has any general power to over-ride that height in the construction of the engineering works referred to, and therefore it seems a most imprudent act to promulgate a new height which is manifestly not valid and cannot be imposed on these works.

5. But there is one power which is possessed by those who construct these works. While not possessing power to alter the real level, represented by the figure + 12.53 O.D. (Liverpool) they may express that level in a different manner if circumstances render it necessary or desirable to do so, and these circumstances have now arisen. The old Ordnance Datum (Liverpool) is obsolete and has been replaced by the new Ordnance Datum (Newlyn). The two differ considerably and erratically so that engineers are now under the necessity of transmuting the old heights to the new ones, according to locality. The local differences, mostly deductions, have been published by the Ordnance Survey and are the only authoritative method of effecting this transmutation.

The local difference in the area of London Bridge and London Docks is 1.4-ft. therefore the height of T.H.W., formerly recognised as 12.53-ft. above Ordnance Datum (Liverpool), may now be recognised, with reasonable accuracy, and without altering the real level, as 11.13-ft. above Ordnance Datum (Newlyn); in the Southend area the equivalent is still lower, being only 11.03-ft. O.D. (Newlyn).

Clearly it is no assumption of mine but a piece of indisputable arithmetic that the new T.H.W. 11.4 O.D. (Newlyn) is about 3-in. higher at London Bridge and about 4½-in. higher at Southend than the old and statutory heights of T.H.W. The T.H.W. at London Bridge is undoubtedly + 11.13-ft. O.D. (Newlyn) and there exists no authority and no justification for raising it to + 11.4-ft.

6. I surmise that Captain Shankland determined the level of his new T.H.W. by levelling the tide gauge at Tower Pier from

Correspondence—continued

adjacent bench marks and, finding it was nearly 11.4-ft. O.D. (Newlyn), forthwith adopted that height as T.H.W., and either overlooked or ignored that it was 3-in. higher than the statutory height of 12.53-ft. above O.D. (Liverpool). If this were indeed his course of action it was, in my opinion, utterly wrong and the figure worthless. Nevertheless it may explain his assertion that he had made no change.

7. In the 1945 Tide Tables of the Admiralty, the zero of prediction in London is given (as before) as 8.47-ft. *below* O.D. (Liverpool), that is 21-ft. below the level of T.H.W. or + 12.53-ft. O.D. (Liverpool) (+ 12.53 −21.00 = − 8.47). It is the new height of T.H.W., he is not aware that it involves a change of 3-in. in the level of that zero.

Similarly the 1945 Tide Tables of the Port of London Authority not only make no mention of the new T.H.W. or of any change, but give positive proof that the compilers are not aware of any. In the section "Dock Particulars" the depths of dock entrances are given as depths in feet and inches below T.H.W. The depths are exactly as given for many years. It is evident therefore that if a higher T.H.W. is in use in the section dealing with tide predictions, it is certainly not in use in the section dealing with dock particulars. It seems clear that these discrepancies are the direct result, first, of the introduction of a higher T.H.W. and secondly, of the claim that no change is involved.

8. These considerations show clearly that unless the tidal datums of the River Thames are placed upon a foundation, more accurate and more authoritative than this new T.H.W. created by Captain Shankland, there is certain to be continued confusion in all published data concerning the River. In the present arrangement of levels we find that chart datums, zeros of prediction, depths of dock entrances and the construction of engineering works are tied primarily to the old T.H.W. If now they are to be tied by the same figures to a new T.H.W. 3 or 4-in. higher, all these sub-datums must be also altered in real level by 3 or 4-in. And if to that we add that the new T.H.W. has no official authority and pretends to be the same in real level as the old T.H.W. and that its use can be resisted by the owners of certain works, it is easy to see that widespread confusion will arise.

The only way to avert this is to leave T.H.W. untouched and to relate sub-datums, etc., directly to Ordnance Datum (Newlyn) by means of a new low water datum such as I described in my original paper on this subject. There are no technical difficulties in this course.

Yours faithfully
WM. B. HALL, M.I.C.E.

Whetstone, N.20
1st January, 1946.

The Port of Amsterdam

Reconstruction and Rehabilitation

An informative article in *Lloyd's List*, of January 4th, based on the publication, "*Voice of the Netherlands*," gives some interesting particulars of the present condition of the port and of the steps taken for its rehabilitation.

The Germans probably intended to destroy Amsterdam harbour completely, for plans were so far advanced that copies were secured by agents of the Dutch resistance movement. When the Allied Forces first reached the southern area of Holland in September, 1944, the Germans started to put the demolition plan into execution, but stopped when the Allied advance came to a standstill, and no further destruction was carried out.

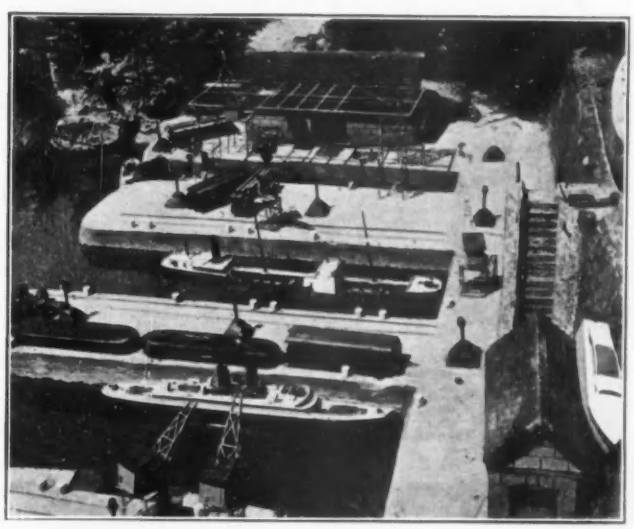
After the German capitulation the work of repair and reconstruction was taken in hand at once. Of the four important locks, only the largest had been destroyed; the other three were in working order. Outside the moles a steamship had been sunk, partly blocking the entrance; between the two moles a passage was still obstructed by a Dutch vessel sunk by the Germans in May, 1940, but part of this had been removed, leaving a channel about 330-ft. wide. Farther east, between the railway bridge on the Amsterdam-Zaandam line and the oil dock, the Germans had sunk the hulls of two partly finished ships, one of 9,000 tons and one of 3,000 tons. In addition, 70 other craft of various sizes had been scuttled to obstruct navigation, among them four floating docks, two grain elevators, and a number of floating cranes and barges.

On the quays only 40 out of a total of 220 cranes remained undamaged. Sheds and warehouses along the quays had been extensively damaged by the blasting of the cranes, and many of the sheds had been made useless. One shed had been burnt down during an air raid, while in the Oil Dock (Petroleumhaven) the greater part of the dock and the installations had been destroyed in 1940. What was left or had been repaired in the meantime was blown up by the Germans in September, 1944. Only the foundations of the tanks and the dock itself remained intact. The Coen Dock, the newest of the dock basins, was completely devastated. With the exception of two stretches, together about 750 yards in length, all the quay walls had been destroyed by the explosion of sea mines placed behind them. A total of 260 yards of quay for sea-going traffic and 1,950 yards for inland traffic had been destroyed.

In spite of all this damage, a great part of the port, particularly of the eastern area, remained almost untouched except for the blasting of the cranes. More important still, the connection with the east remained open, except for various obstructions which have now been removed. Even in its present condition, Amsterdam harbour is a considerable factor in transport to the Continent, and every acceleration in the progress of its rehabilitation will be a further help towards a solution of Continental transport problems.

Quaint Model Dock System

In association with a small scale model of an English Village, designated Bekonscot, constructed near Beaconsfield in Buckinghamshire, is the Lilliputian dock system shown in the accompanying photograph. The system is called "Southpool Docks," and is complete, as will be seen, with quays and sheds, cranes and railway sidings, and vessels moored at their berths. A small fee is charged to visitors for inspection and the proceeds are given to charities. The model has been visited by the King, Queen and the Princesses Elizabeth and Margaret Rose.



"Southpool Docks," Bekonscot Model Village

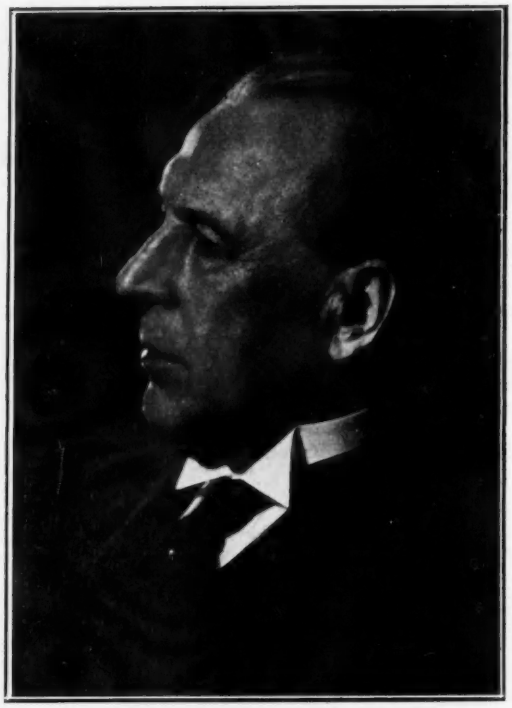
Holiday Award to Dock Workers

Dock-gate men and berthing masters employed by the Belfast Harbour Commissioners have been awarded nine days holiday leave with full pay by the Northern Ireland Arbitration Tribunal. The men claimed 14 days leave.

Notable Port Personalities

LII—The Rt. Hon. Sir John Anderson

The Rt. Hon. Sir John Anderson, P.C., G.C.B., G.C.S.I., G.C.I.E., F.R.S., was born in July, 1882, and received his early education at George Watson's College, Edinburgh. Thereafter, he studied at Edinburg and Leipzig Universities, graduating as M.A. and B.Sc. Later he received the honorary degree of LL.D. at Aberdeen, Cambridge, St. Andrews and Edinburgh.



THE RT. HON. SIR JOHN ANDERSON

Entering the Civil Service in 1905, he joined the Colonial Office staff. He was Secretary to the National Health Insurance Commission from 1913 to 1916; and on the establishment of the Ministry of Shipping at the end of that year he became Permanent Secretary to the Ministry, where he remained until, in 1919, he became Second Secretary to the newly created Ministry of Health and later Chairman of the Board of Inland Revenue. After two years as Under Secretary to the Lord Lieutenant of Ireland, he was appointed in 1922 Permanent Under Secretary of State at the Home Office. From 1932 to 1937 he was Governor of Bengal.

In 1938, he was appointed to the British Cabinet as Lord Privy Seal, with special responsibility for the organisation of Civil Defence and National Voluntary Service. On the outbreak of war in September, 1939, he became Home Secretary and Minister of Home Security. In October, 1940, he was appointed Lord President of the Council and in September, 1943, Chancellor of the Exchequer, remaining responsible for atomic research and development.

U.S. Gulf Ports Association

Mr. J. Russell Wait, general manager of the Harris County, Texas-Houston Navigation District, was unanimously elected president of the Gulf Ports Association at the second annual meeting of the organisation held recently in Houston. He succeeds E. O. Jewell, general manager of the Port of New Orleans. Mr. Wait is also president of the Texas Ports Association and past president of the American Association of Port Authorities.

Obituary

A Notable Port Engineer

The recent death of **Mr. Maurice Fitz-Gerald Wilson** removes a figure of outstanding distinction from the ranks of dock and harbour consultant engineers. Born in 1858 and educated at Eton where he was Captain of Boats, he commenced his technical training in 1877, and, on its completion, was engaged on various dock, harbour and railway undertakings. Thus from 1892 to 1895, he was Resident Engineer on Southampton dock works, and from 1896 to 1905 Superintending Engineer in charge of survey for the Admiralty Harbour, Dover, and subsequently in charge of works under contract.

In 1906, he joined the well-known consultant firm of Coode, Son & Matthews, of which the late Sir William Matthews was then senior partner. He participated in the extensive practice of the firm and amongst other works was actively engaged in the design and construction of Peterhead Harbour of Refuge, Singapore Docks and the Johore Causeway, Colombo Harbour and Kilindini wharfage as also entrance works and wharfage at Lagos, and harbour works on the West Coast of Africa.

He made professional visits to all these sites and to Hong Kong, Cyprus, Egypt, Canada, and South Africa, advising the Dominion Governments in the latter two cases on important dock and harbour projects. He was also intimately associated with numerous other undertakings, such as Fishguard Harbour Breakwaters for the Great Western Railway, the Aire and Calder Navigation, and he advised the Admiralty on the designs of the Singapore Naval Base; the Lyttelton and Gisborne Harbour Boards, New Zealand; Whang-pu Conservancy, Shanghai; Mersey Docks and Harbour Board, etc.

In 1924, on the death of Sir Maurice Fitzmaurice, who had joined the firm in 1912, he became senior partner in his firm. He was elected a member of the Council of the Inst. C.E. in 1928, and subsequently became senior Vice-President. On his declining to accept the office of President, he was made an Honorary Member of the Institution in 1940.

He was a member of the Consultative Committee of Engineers convoked by the European Commission of the Danube in 1921; a member of the Sea-Action Committee, and subsequently became Chairman of that body.

From 1929 to 1933, he was in charge, under the direction of a Departmental Committee, of the technical investigation into the scheme for generating electric power from the tides in the Severn Estuary, the Report on which was issued in 1933.

He was closely associated with the British Standards Institution and for several years was its Chairman.

Clyde Pilotage

Record Traffic Figures for 1944

At the annual meeting, on November 26th, of the Clyde Pilotage Authority, **Mr. Barclay Hogarth,** Chairman of the Executive Company, stated that the greatest volume of traffic in the history of the Clyde passed up and down the river in 1944. Gross revenue amounted to £211,642, including pilotage fees of £166,798. These were the highest in the history of the Authority. Gross tonnage handled was about 120,000,000 and there were close on 40,000 acts of pilotage.

Not unexpectedly the revenue had sharply declined during the last few months and to meet their financial obligations and keep pilots' earnings to a reasonable level, the Authority had applied to the Ministry of War Transport for a by-law to increase pilotage rates and charges by 30 per cent., and to increase other fees and charges, including boarding and landing, by 50 per cent.

Mr. Hogarth paid tribute to the good service rendered by the pilots, who number 59, 51 being permanent and eight temporary. This compared with a peacetime staff of 50.

Mr. Hogarth was re-elected deputy-chairman of the Authority and chairman of the Executive Committee, and Mr. William Cuthbert was appointed the Authority's representative to the Dock and Harbour Authorities' Association.

Port of Southampton

War-time Commemorative Plaque Unveiled

An interesting Anglo-American ceremony took place on January 3rd at Southampton Docks, when a bronze plaque was unveiled at No. 8 Gate by **Colonel Sherman L. Kiser,** Port Commander, 14th Major Port, United States Army, to commemorate the passage through the port during the war of over 3½ million American troops.

The inscription on the plaque reads:

> "1939-1945. This tablet was presented to the Southern Railway by the 14th Major Port, United States Army, in proud and glorious memory of the men and women of the Forces of the United Nations who sailed from this port during the great war against aggression to secure the freedom of mankind."

Southampton Docks played an important part in the war of 1914-18, when over seven million men and more than three million tons of stores and equipment were passed over the quays. The port's activities have been even greater in the late war, during which its close connection with the armed Forces of the United States has been the most prominent feature of its activities.

Colonel Kiser, unveiling the plaque, spoke of the loyalty and enthusiasm of the thousands of men connected with Southampton in lifting the material and personnel bound for the Continent. The magnificent job done by the workers of the port during the war, he said, was something that would go down in history as one of the greatest demonstrations of what labour could do. Of one fact he was particularly proud—that throughout the whole period, despite strikes in other ports of the country, the Southampton labourers remained loyal. To his mind, the main lesson they had learned from their contract with Southampton was the elimination of discord. That was a lesson which should be learnt by the whole world. The sooner nations buried resentment the sooner would the world be a fit place in which to live. He hoped that the plaque would remain in position so that many people could see it, and he hoped that those who passed through the gate would remember the lesson it taught.

Mr. R. P. Biddle, Dock and Marine Manager, Southern Railway, responding, said that the plaque would be a lasting memorial to the close co-operation which had existed between the Fourteenth Major Port and the whole of the civilian staffs associated with the Port of Southampton. It could truly be said that, as a result of that co-operation, a marvellous job of work had been achieved. No fewer than 4½ million personnel had passed through the port during the war, and nearly five million tons of military stores and equipment. Those figures reflected much credit on the American port staff, the British Movement Control, the Admiralty, Ministry of War Transport, Sea Transport, and all the civilian dock workers of every category. Southampton was proud of the way the dockers had pulled their weight during the war years. They did splendidly, and so did the railway grades, the ship-repairers, and many others.

Reflecting on the tremendous co-operation which had existed throughout the war period between the American and British Service Departments and the civilian dock organisations, he hoped that it would be possible for a similar co-operation to continue between the two great nations so that they might be as united in the pursuance of peaceful commerce as they were in the successful development of the war effort. A continuation of that good will should guarantee years of peaceful progress. The happy phraseology on the plaque should encourage that ideal. It should remind them also that many of those who passed through the port on their great adventure to the other side failed to return. It was up to those who were left—both British and American—to see that that sacrifice was not made in vain.

New Quay at Wallsend-on-Tyne.

The North Eastern Marine Engineering Company of Wallsend-on-Tyne, propose to rebuild a quay, 600-ft. long, in reinforced concrete. The new quay will have a width of about 30-ft.

Dublin Port and Docks Board

Valedictory Statement by Outgoing Chairman

At the recent annual meeting of the Dublin Port and Docks Board, the retiring Chairman, **Mr. T. O'Connor,** reviewed the trade position of the port during the past twelve months. He said that the registered tonnage of ships entering the port during the year had increased by 13,000, dues collected and advanced by £18,300, and dues on goods by £23,600. Eighteen tankers had discharged approximately 116,000 tons of petroleum products, and other ships had brought in a total of 125,000 tons of grain, 20,000 tons of phosphates and pyrites, and 4,700 tons of tobacco.

Apart from those commodities, about 70,000 tons of general cargo from foreign ports had been discharged.

Mr. O'Connor added that while the tonnage of vessels using the port had shown a satisfactory increase, they must not forget that the total for the year represented only 38 per cent. of that for 1938. Even in the last two months of the year the tonnage was only 52 per cent. of the total for the corresponding period in 1938.

Turning to reconstruction schemes, he pointed out that a welcome improvement in the supply of certain materials had enabled work to be resumed on the construction of the Ocean Pier at Alexandra Basin. Three caissons, giving an additional length of 165-ft., had already been placed in position and foundations for five more had been excavated.

Another section of the quay wall at Custom House Quay had been completed, and the foundations of the fifth section had been laid, thus bringing the work up to the entrance to George's Dock. Work at Custom House Quay had also included the completion of four more bays of the new transit shed and the continuation of work on two others.

A contract had been placed for the construction of the first section of the new transit sheds at the North Wall extension, and it was expected that this section would be ready for use early this year. Designs had been almost completed for a double-storey transit shed at Alexandra Quay, a general warehouse at Alexandra Road, and a large additional building for the port stores. It was hoped that work on these would be begun before the end of the year.

Mr. O'Connor went on to say that preliminary details of schemes for other works, including further transit sheds at Alexandra Quay, the North Wall extension, and the Ocean Pier had been prepared. The board had completed plans for the provision of further extensive warehouses within the port, and these would be put in hand as soon as conditions permitted.

The total tonnage dredged had shown improvement, being 1,135,000 tons as compared with an average of 1,000,000 tons for the previous two years. The navigable depth of the river had been maintained, and some dredging on the bar had been undertaken. Ballast supplied during the year totalled 21,500 tons, as compared with 18,500 tons in 1944, graving dock and slip earnings £3,734 (£2,646), pilotage earnings £9,600 (£6,400), and towage £8,600 (£5,750).

Mr. O'Connor said that, in view of the introduction of the Harbour Bill, 1945, that meeting might very well be the last at which the board as at present constituted would meet to elect a chairman and vice-chairman.

In conclusion, he expressed thanks to his colleagues for their assistance and to the board's officers for their loyal co-operation, particularly Mr. R. F. Lowe, secretary.

Mr. John McEvoy, vice-chairman of the board and manager of the Irish-American Oil Company, was then elected chairman and invested with the chain of office by the Lord Mayor of Dublin (Alderman P. S. Doyle), who presided.

Lock Manifold Experiments

Owing to pressure of more urgent matter, the concluding instalment on this subject has been held over.

Dock Labour Wages Agreement

Ratification of Terms

The compromise effected in the recent dock labour dispute, by which the Unions representing the men agreed to accept the award made by the Evershed Committee, has now been formally ratified in an agreement between the National Association of Port Employers and the Trade Unions concerned.

Under the terms of the agreement the daily minimum has been raised from 16s. to 19s. in the greater ports and to 18s. in the smaller ports, on a half-daily basis, dating from November 26th. Piece-workers receive increases of up to 35 per cent. on existing piecework rates, without prejudice to any question of a national review of piecework principles and with the 19s. a day guaranteed. The wages of permanent men are increased by 16s. 6d. a week.

Holidays are a week with pay each year at the standard time rate (2s. 4½d.) for 44 hours. Statutory and proclaimed holidays will be paid for at the standard time rate; men required to work will be paid the standard time rate plus ordinary time or piece rates.

An essential condition of the agreement is that there shall be the fullest measure of production. "To this end," it states, "both parties undertake to do everything in their power to ensure that existing national and local agreements are honoured and that men shall work for the full period for which they are engaged without unauthorised absences or stoppages."

It was agreed to proceed with discussions on decasualisation, and in the event of deadlock the views of all parties to be submitted to the Minister of Labour, who, before preparing a scheme, will set up an independent inquiry and appoint an independent chairman.

A joint committee of the National Joint Council has been appointed to examine the industrial arrangements of the industry on the basis that there will be permanent schemes of decasualisation.

Port of Bristol

Traffic Returns during War Years

The Port of Bristol, being a modern and efficiently equipped West Country port, was called upon to handle very considerable quantities of cargo, both into and out of the country during the war. This war-time traffic was so great that the total cargo handled at the port during any twelve months was nearly 100 per cent. above the normal peace-time traffic. Conditions are now returning to something like peace-time trading, and the following figures may be of some interest:—

Twelve Months ended 31st December, 1938, 1944 and 1945.

Number of Vessels and Register Tonnage Entered.

	1938.		1944.		1945.	
Foreign ...	1,166	3,036,614	936	4,496,329	647	2,939,772
Coastwise ...	7,404	970,669	9,462	1,413,236	8,030	1,219,075
Total ...	8,570	4,007,283	10,398	5,909,565	8,677	4,158,847

Imports and Exports—Cargo Handled.

	1938. Tons.	1944. Tons.	1945. Tons.
Foreign ...	3,044,065	6,703,654	4,456,573
Coastwise ...	1,776,951	2,526,553	2,063,182
	4,821,016	9,230,207	6,519,755

The war-time traffic at the port was largely different from the general cargo, grain and oil trades, for which the port specially catered, the added experience being useful in meeting all types of demands for trade which might in future be made on the port. There is already a welcome return to some of the staple trades of the port.